

GLOBAL WARMING—INTERNATIONAL ENVIRONMENTAL AGREEMENTS—THE 1992 UNITED NATIONS CONFERENCE ON THE ENVIRONMENT AND DEVELOPMENT MOST LIKELY WILL NOT CULMINATE IN A SUCCESSFULLY PREVENTIVE GLOBAL WARMING TREATY WITHOUT THE UNITED STATES' SUPPORT.*

I. INTRODUCTION TO GLOBAL WARMING

Global warming¹ is an ecological, as well as economic,² threat to the United States and the world community. Many scientists assert that carbon dioxide, methane, chlorofluorocarbons, and sulfur dioxide, among other gases, are "greenhouse gases" which trap heat in the earth's atmosphere, much as glass traps heat in a greenhouse.³ "Greenhouse gases," which trap heat from solar radiation that ordinarily would have slipped through the earth's atmosphere into space, have probably caused the recent slight rise in the earth's temperature.⁴

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¹ This phenomenon is also coined "the greenhouse effect." *Document Implies U.S. Summit Position Will Oppose Greenhouse Gases Timetable*, 13 Int'l Env't. Rep. (BNA) No. 6, at 229 (June 13, 1990). After rising into the earth's atmosphere, greenhouse gases, which include carbon dioxide, methane, and chlorofluorocarbons, trap solar radiation that otherwise may have reflected from the earth into space. *Where Are We Headed in Responding to Climate Change?*, 11 Int'l Env'tl. Rep. (BNA) No. 10, at 555 (Oct. 12, 1988). This trapped heat causes the earth's temperature to rise. *Id.*

² Greenhouse gases emitted by the world's industrial sector have stained and eroded outdoor buildings and monuments. This smog pollution has cost the Netherlands annually an estimated \$10-15 million in restoration fees. *Our Common Past: Conserving Our Cultural Heritage*, 13 Int'l Env't. Rep. (BNA) No. 7, at 306 (July 11, 1990). Further, in the United States, the estimated cost of restoring historic buildings is in the billions of dollars. *Id.* However, these dollar figures exemplify only a small sector of the incurred price of smog pollution. *Id.*

³ *Document Implies U.S. Summit Position Will Oppose Greenhouse Gases Timetable*, *supra* note 1, at 229.

⁴ A succession of average global temperatures dating back to 1880 show a rise of 0.6 degrees Celsius. CHRISTOPHER FLAVIN, *WORLDWATCH PAPER 91—SLOWING GLOBAL WARMING: A WORLDWIDE STRATEGY* at 6 (Oct. 1989). Several climate computer models have lead scientists to predict that by the end of next century the earth's temperature will have risen by 2.5 to 5.5 degrees Celsius, which is warmer

As a result of its rising temperature, the earth's weather conditions have experienced recent changes. For example, in 1988, floods left a quarter of Bangladesh's population homeless, and Hurricane Gilbert, which was the most severe hurricane ever recorded in the western hemisphere, destroyed much property in the Caribbean.⁵ Furthermore, a lengthy 1988 summer drought caused a severe fire in Yellowstone National Park.⁶ Climate models and impact analyses suggest that summer droughts, summer air quality, heat waves, flooding, forest fires, and increased hurricane intensity and frequency, are events that are likely to occur more often as the earth's temperature rises.⁷

Global warming, if it continues, will have a great economic impact upon the world economy. For example, melting icebergs will cause a rise in global sea level. As a consequence, the delicate marine ecosystem will be altered. Marshes, where most sea life begins, will be disturbed and animal species which live in brackish water—a mix of salt water and fresh water—may not be able to survive the increased concentration of salt water. These disturbances to the marine ecosystem will interfere with the food chain and possibly bankrupt the world's fishing and shrimping industries.⁸

Coastal cities are also in danger. For example, in Charleston, South Carolina, the cost of adapting to a rising sea level could reach \$400

than the earth has been for millions of years. *Id.* at 17. As a result, sea level may rise by 1 to 2 meters. *Id.* at 21.

In addition, a study by Charles Keeling, a graduate of the Scripps Institution of Oceanography in California, revealed that atmospheric carbon dioxide concentration has increased from 315 parts per million to 351 parts per million since 1958, or 11 percent. *Id.* at 11. Air bubbles in glacial ice suggest that before the Industrial Revolution carbon dioxide concentration was approximately 280 parts per million. *Id.* at 12. Carbon dioxide has reached its highest level in 160,000 years, and in the last 30 years the increase in its concentration exceeds the increase in the previous two centuries. *Id.*

Dr. James Hansen and Dr. Sergej Lebedeff, both from the Goddard Institute for Space Studies, found that since the 1880s, the four warmest years occurred in 1980, 1981, 1983 and 1987. *Where Are We Headed in Responding to Climate Change?*, *supra* note 1, at 555. Also, Dr. Hansen stated with 99 percent confidence that the temperature rise in the last 30 years is not chance occurrence, but instead is a real warming trend. *Id.*

⁵ *Where Are We Headed in Responding to Climate Change?*, *supra* note 1, at 555.

⁶ *Id.*

⁷ Because global warming scientific research is difficult to obtain, these aforementioned meteorological events have not been conclusively linked to global warming. *Id.*

⁸ FLAVIN, *supra* note 4, at 21.

million by the year 2050.⁹ It is estimated that by 2100 it may cost at least \$300 billion to protect the United States' east coast.¹⁰ In addition, the rise in sea level could devastate third world countries where much of the population lives and farms on river deltas. For instance, in Bangladesh, the rising sea level could flood up to 18% of the land area and force the evacuation of approximately 17 million people.¹¹

Although many segments of the international community recognize global warming as an imminent threat to the earth's climate,¹² an international consensus on appropriate measures to curb or halt the greenhouse effect has not been reached.¹³ The exception is an agreement for the reduction of chlorofluorocarbons (CFCs), a greenhouse gas that destroys the earth's ozone layer in addition to trapping heat into the atmosphere. That agreement, the Montreal Protocol on Substances that Deplete the Ozone Layer,¹⁴ was the result of an

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

¹² For example, the Environmental Minister of the European Community Council stated that the European Economic Community (EEC) supported prompt action to counter the greenhouse effect. *International Meeting Yields Debate Over Global Climate Change Positions*, 13 Int'l Envtl. Rep. (BNA) No. 5, at 201 (May 9, 1990). In contrast, some scientists assert that our planet will adapt to a temperature rise by increased formations of cirrus clouds that reflect sunlight. William K. Stevens, *An Oceanic Indication That Earth's Climate Might Regulate Itself*, N.Y. TIMES, May 7, 1991, § C, at 4, col. 1. However, this could cause dramatic shifts in the earth's circulation of heat and wind and a resulting change in weather patterns. *Id.* Another study stated that a pollutant which helps create acid rain, sulfate aerosols, causes clouds and reflects sunlight. Sharon Begley, *The Benefits of Dirty Air*, NEWSWEEK, Feb. 3, 1992, at 54, col. 2. However, because sulfates are unhealthy to breathe and acid rain is destructive, the United States' 1990 Clean Air Act Amendments will reduce their emissions and as a result global warming will increase. *Id.* at col. 3. In addition, another scientific study stated that ozone depletion may have a cooling effect which would offset part of the global warming trend. William K. Stevens, *Summertime Harm to Shield of Ozone Detected Over U.S.*, N.Y. TIMES, Oct. 23, 1991, § A, at 2, col. 5.

¹³ At meetings in Nairobi, Kenya which began the week of September 7, 1991, the United States expressed its reluctance to reduce its carbon dioxide emissions. Chakravarthi Raghavan, *Environment: What to Do About Carbon Dioxide Emissions? An Inter Press Service Analysis*, Inter Press Serv., Oct. 2, 1991, available in LEXIS, Nexis Library, Wires File; *accord Missing the Global-Warming Target*, BOSTON GLOBE, Sept. 15, 1991, at A26. Saudi Arabia has also resisted any treaty which may lower consumption of its oil exports. Jessica Mathews, *Gorilla in the Greenhouse*, WASH. POST, July 25, 1991, at A17.

¹⁴ Montreal Protocol on Substances that Deplete the Ozone Layer, *opened for signature* Sept. 16, 1987, 26 I.L.M. 1541 (1987) (entered into force Jan. 1, 1989)

international effort to reduce ozone depletion by phasing out the use of CFCs. Because CFCs contribute to 25% of the greenhouse effect, ozone depletion and global warming are intertwined.¹⁵

Although the reduction of CFCs may slightly reduce global warming,¹⁶ carbon dioxide contributes 57%, methane 12%, and nitrous oxide 6% to the greenhouse effect.¹⁷ Therefore, to substantially protect the earth from a further rise in temperature, both carbon dioxide emissions¹⁸ and methane must be limited. In addition, a successful global warming treaty must require that deforestation be curbed. Because living plants constantly absorb carbon, forests function as carbon sinks.¹⁹ Therefore, the destruction of forests without equivalent

[hereinafter Montreal Protocol], *reprinted in* 52 Fed. Reg. 47,515-19, called for the reduction of CFCs. CFCs are man-made chemical compounds, which were first manufactured by General Motors in 1928. Timothy C. Faries, *Clearing the Air: An Examination of International Law on the Protection of the Ozone Layer*, 28 ALBERTA L. REV. 818 (1990). "CFCs are non-toxic, non-flammable, non-corrosive, odorless, extremely stable and available for use in a wide range of modern industries." *Id.* at 821. For example, CFCs are used in coolants in refrigerators and air conditioners, agents in medical equipment sterilization, computer chips, and components in the manufacture of plastic foam. *Id.* at 821 n.22.

¹⁵ CFCs migrate to the Earth's stratosphere and encounter solar radiation (ultra violet UV-B radiation, *see supra* note 71), which splits the molecules and releases their components, including chlorine. Douglas H. Ogden, Note, *The Montreal Protocol: Confronting the Threat to Earth's Ozone Layer*, 63 WASH. L. REV. 997, 1000 (1988).

Once freed, chlorine attacks the ozone layer: small amounts of chlorine atom released removes 100,000 molecules of ozone from the atmosphere . . . Besides destroying the ozone layer, CFCs add substantially to global warming. While in the atmosphere, CFCs and other gases trap infrared radiation reflected from the Earth's surface, causing atmospheric temperatures to rise, and creating a "greenhouse effect."

Id. (footnotes omitted); accord Robert W. Hahn & Albert M. McGartland, *The Political Economy of Instrument Choice: An Examination of the U.S. Role in Implementing the Montreal Protocol*, 83 NW. U.L. REV. 592, 593 (1989) (the authors state that "the depletion of stratospheric ozone has been tied to increases in global warming."). See John W. Kindt & Samuel P. Menefee, *The Vexing Problem of Ozone Depletion in International Environmental Law and Policy*, 24 TEX. INT'L L.J. 261, 263 (1989) (lists each of the gases which has been identified as affecting the ozone layer).

¹⁶ FLAVIN, *supra* note 4, at 13.

¹⁷ *Id.* Notably, industrialized countries are responsible for about 46% of the greenhouse problem, less developed countries for 35%, and the former Soviet Union and Eastern Europe for 19%. *Id.* at 8.

¹⁸ A planet's temperature is largely due to the composition of its atmosphere. *Id.* at 10. Venus, whose atmosphere consists mainly of carbon dioxide, is so hot that a human being's blood would boil. *Id.* In contrast, Earth's atmosphere mainly includes nitrogen and oxygen, while only 0.03 percent is carbon dioxide. *Id.*

¹⁹ "While developing countries burn only a small fraction of the world's fossil

replenishment efforts increases the amount of carbon dioxide in the earth's atmosphere.

The United Nations has actively pursued the issue of a multilateral treaty to protect against global warming. The United Nations Environment Program (UNEP),²⁰ in conjunction with the World Meteorological Organization (WMO), established the Intergovernmental Panel on Climate Change (IPCC) for the purpose of studying the greenhouse effect.²¹ In 1988, the IPCC enlisted the United Kingdom, the Soviet Union, and the United States to form three distinct working groups to study different aspects of the greenhouse effect.²² Also, the United Nations brought several countries together to begin negotiations regarding an international convention on climate change.²³ In June of 1992, the United Nations will conduct a Conference on the Environment and Development (UNCED) in Rio de Janeiro,

fuels, some contribute heavily to global warming through deforestation." *Id.* Brazil contributes over six times as much carbon to the atmosphere through deforestation than through burning fossil fuels. Christopher Flavin, *Slowing Global Warming*, in STATE OF THE WORLD: A WORLDWATCH INSTITUTE REPORT ON PROGRESS TOWARD A SUSTAINABLE SOCIETY 17, 20 (Lester R. Brown et al. eds., 1990). In the past few years, at least 1 billion tons of carbon is estimated to have leaked into our atmosphere annually due to the net loss of forests. *Id.* at 18.

²⁰ The establishment of UNEP was called for at the U.N. sponsored Stockholm Declaration on the Human Environment in 1972. C.J. Poirier, Report in Support of ABA Resolution 10B at 8 (passed by A.B.A. House of Delegates Aug. 12, 1991, Atlanta, Georgia) (copy on file with author); see *infra*, note 48. The UNEP is empowered to gather, assess, and report environmental information and to promote international laws. Catherine Tinker, *Environmental Planet Management by the U.N. Actions: An Idea Whose Time Has Not Yet Come?*, 22 INT'L L. & POL. 749, 793 (1990).

²¹ See UNEP/ WMO Panel From 30 Countries to Work Toward Global Warming Treaty, 11 Int'l Env't. Rep. (BNA) No. 12, at 644 (Dec. 14, 1988).

²² The United States would identify potential strategies for counteracting climate change; the United Kingdom would develop a better understanding of the scientific processes involved in global warming; and the Soviet Union would assess the potential environmental, social, and economical impacts of climate change. *Id.*

²³ Meetings were held on August 6-31, 1990 in Nairobi, Kenya, see 1992 Conference Preparations Initiated; Officials Map Out Environmental Blueprint, 13 Int'l Env't. Rep. (BNA) No. 10, at 397 (Sept. 26, 1990), and on February 4-14, 1991 in Chantilly, Virginia, U.S.A., see U.S. Planning for Framework Negotiations for February Conference on Climate Change, 14 Int'l Env't. Rep. (BNA) No. 1, at 3 (Jan. 16, 1991). The most recent meetings where nations discussed possible terms of a June 1992 global warming treaty were held February 18-28 in New York City at the United Nations, *What Are the Climate Negotiations?*, U.S.A. TODAY, Feb. 18, 1992 at 7A, col. 4, and on April 30, 1992, a sixth session began in New York, see *Rep. Sharp Expresses Doubt Over U.S. Resolve to Cut Greenhouse Gases*, Int'l Env't. Daily (BNA) (Mar. 5, 1992).

Brazil, where United Nations officials will propose an international treaty on climate change.²⁴

In addition to the United Nations' efforts, the Group of Seven Industrialized Nations (G-7)²⁵ held an economic summit July 15-17, 1991, at which each G-7 country except the United States urged a unified commitment to reduce greenhouse gas emissions, specifically carbon dioxide levels.²⁶ Because the United States doubts the accuracy of scientific data on carbon dioxide emissions and believes the global warming issue requires further study, it opposed taking action to reduce production or consumption of carbon dioxide.²⁷

As a result of the United States' rejection of the commitment to reduce carbon dioxide levels at the 1991 G-7 summit,²⁸ many United Nations officials,²⁹ environmentally conscious nations,³⁰ environmental groups, and other non-governmental organizations (NGOs)³¹ are con-

²⁴ See *UNEP to Use 1992 Conference as Platform to Stress Threat Posed by Global Warming*, 14 Int'l Env't. Rep. (BNA) No. 12, at 338 (June 19, 1991) (Alain Clerc, of the European office of UNEP, stated that UNEP intends to maintain a key role in the development of an international treaty on climate change).

²⁵ The Group of Seven (G-7), which holds annual economic summits, consists of the United States, Japan, Italy, France, the United Kingdom, Germany, and Canada. *Conservationists Rate West Germany Best of G-7 Nations on Environmental Issues*, 13 Int'l Env't. Rep. (BNA) No. 7, at 281 (July 11, 1990).

²⁶ *CO2/ G-7 Summit: U.S. Prevails on G-7 as Summit Concludes With No Commitment to Curb Carbon Dioxide*, Int'l Env't. Daily (BNA) (July 18, 1991).

²⁷ Similarly, at the 1990 G-7 summit in Houston, Texas, the United States prevented the nations from making a commitment to reduce carbon dioxide emissions. *Id.*

²⁸ See *supra* note 26.

²⁹ For example, in response to the United States' reluctance to commit to reducing carbon dioxide levels, UNEP Executive Director Mostafa Tolba said "[t]he world needs tough action to limit global warming, not fine words in a 'paper tiger' treaty." *Avoid "Paper Tiger" Treaty on Global Warming, U.N. Urges*, Reuter Library Rep., Jan. 22, 1991 (BC cycle), available in LEXIS, Nexis Library, Omni File.

³⁰ In response to the United States' reluctance in 1990 to reduce carbon dioxide emissions, the Netherlands' Minister of Housing, Physical Planning, and Environment called the Bush initiative of requiring more concrete research "timid." *International Meeting Yields Debate Over Global Climate Change Positions*, 13 Int'l Env't. Rep. (BNA) No. 5, at 201 (May 9, 1990). Also, the environment minister of West Germany stressed that gaps in scientific proof of global warming should not be used by the United States as an excuse to avoid committing to action. *Id.*

³¹ A report by the Inter-American Dialogue of the Aspen Institute stated that "[n]o Latin American government will act without a clear U.S. commitment to combat global warming." *Concerted Effort to Address Climate Change Deserves Urgent Global Priority, Report Says*, 13 Int'l Env't. Rep. (BNA) No. 16, at 545 (Dec. 19, 1990). Also, Greenpeace International, the World Wide Fund for Nature, and the Union of Concerned Scientists "accused the United States of selfishly pursuing

cerned that the United States will not support a 1992 United Nations' action-oriented treaty to reduce greenhouse gases. World leaders believe that the United States' position will determine whether an effective 1992 multilateral global warming treaty will succeed.³² Without the United States' support, any action-oriented UNCED global warming treaty will likely fail, and barring countervailing natural phenomena the earth's temperature will continue to rise, hastening the approach of an ecological disaster.

For background material, this note describes the historical international law on air pollution. Next, it explores the United States' failure to support a carbon dioxide reduction and analyzes the underlying reasons behind the Bush Administration's decision. Finally, the note examines how the drafters of the 1992 global warming treaty can utilize past international law on air pollution as a building block for a stronger international agreement to prevent global warming.

II. INTERNATIONAL ENVIRONMENTAL LEGAL BACKGROUND

Customary international law is international law absent a treaty covering the specific subject.³³ It is consensual in that countries over time have agreed to accept certain principles of law. If a world court with jurisdiction over a country determines that customary international law requires that country to refrain from injuring other nations' environmental interests, that country may be liable for damages caused

its strategy [of a flexible approach to emissions reduction which would account for its national energy demand and economic differences between countries] in the face of an environmental and human tragedy." *Money, U.S. Position Remain Barriers for Accord on Climate Change Issues*, Int'l Env't. Daily (BNA) (Sept. 27, 1991). See also *Global Warming Treaty Work Will Be Mostly Refining Language*, *Chairman Says*, 15 Int'l Env't. Rep. (BNA) No. 4, at 91 (Feb. 26, 1992) (Peter Berle, the President of the National Audubon Society, declared, "[i]f the current [U.S.] administration policy continues, it's going to create a train wreck in Brazil." Also, John Adams, the Executive Director of the Natural Resources Defense Council said, "[t]he Rio summit is headed for failure if the United States does not come around soon.").

³² For example, a member of the European Community Council of Environmental Ministers told BNA "that a larger fear is that negotiations at the United Nations environmental summit in Brazil next year will fail because of U.S. recalcitrance on the issue." *U.S. Urged to "Join the Club" by Pledging to Cut Carbon Emissions*, Int'l Env't. Daily (BNA) (Aug. 7, 1991). In addition, Japan contends that without the United States' support, the 1992 global warming treaty will lose its binding authority. *Global Warming Treaty Work Will Be Mostly Refining Language*, *Chairman Says*, *supra* note 31, at 91.

³³ Poirier, *supra* note 20, at 5.

by carbon dioxide emissions that result in global warming. The alternative form of international law is a ratified treaty, which is comparable to a statute because a treaty provides codified international laws. Therefore, if a country enters into a treaty that prohibits carbon dioxide emissions, in the event that the country breaches its obligation under the treaty, it could be liable for its emissions.

A. Customary International Law on Air Pollution

Over half a century ago in the *Trail Smelter* arbitration,³⁴ an international law commission ruled that Canada was liable to persons in the United States for damages caused by transboundary air pollution, which is air pollution that extends across political boundaries. This case arose from a dispute between the Consolidated Mining & Smelting Company of Canada, which was located eleven miles from the U.S.-Canadian border, and private citizens in Stevens County, Washington. The company's smelting process released sulfur dioxide into the air, which then crossed the international border and damaged the homes and farms of the Washington residents. By holding Canada liable for the company's pollution, the international commission created a landmark decision, because it made clear that a nation is responsible for preventing industrial pollution from crossing national boundaries.³⁵

As with *Trail Smelter*, the *Corfu Channel* case³⁶ further established that each country has a customary legal duty to refrain from injuring another nation's territory. In *Corfu Channel*, the International Court of Justice (ICJ) held that Albania was liable to the United Kingdom for the loss of two of its warships destroyed by mines laid in the Corfu Channel.³⁷ The ICJ based its holding on indirect evidence that the nation knew or should have known about the mines laid in her territorial waters.³⁸ Although this case did not focus on environmental

³⁴ *Trail Smelter* (U.S. v. Can.), 3 R.I.A.A. 1905 (1941). For a review of the case, see Faries, *supra* note 14, at 824.

³⁵ This has been referred to as "the good neighbor policy." Roberta Dohse, Note, *Global Air Pollution and the Greenhouse Effect: Can International Legal Structures Meet the Challenge?*, 13 Hous. J. INT'L L. 179, 193 (1990). Also, the standard is expressed by the maxim *sic utere tuo ut alienum non laedas* ("use your own property so as not to injure that of another"). Marc Pallemmaerts, *International Legal Aspects of Long-Range Transboundary Air Pollution*, 1 HAGUE Y.B. INT'L L. 189, 205-06 (1988).

³⁶ *Corfu Channel* (Alb. v. U.K.), 1949 I.C.J. 4 (Apr. 9). See Faries, *supra* note 14, at 825 for review of the case.

³⁷ *Id.*

³⁸ *Id.*

issues, the ICJ's holding was significant because it did not base Albania's liability on a treaty. Rather, the Court held Albania to the customary international law principle that every State has an obligation "not to allow knowingly its territory to be used contrary to the rights of other states."³⁹

Later, in the *Lake Lanoux Arbitration*,⁴⁰ where France desired to re-route a river that eventually flowed into Spain without first obtaining Spanish approval of the plans, the arbitral tribunal held that France would not violate either an existing treaty or customary international law by altering the river's course without negotiating with Spain. However, the tribunal indicated that Spain may have had a claim for a violation of its international rights had it argued that the re-routing of the river would increase the river's temperature or degree of pollution, thereby injuring Spanish interests.⁴¹ This comment by the tribunal lends credence to the theory that customary international law exists which prohibits a State from interfering with another State's environmental interests.

In addition, from the French *Nuclear Test* cases⁴² it may be inferred that customary international law does not allow one nation to interfere with another nation's environmental interests. In these cases, the International Court of Justice did not reach the issue of whether France had violated international customary law by conducting atmospheric nuclear tests which caused radio-active matter to be deposited on Australian and New Zealand territory. Rather, after the ICJ held jurisdictional hearings, the French President and Defense Minister publicly stated that France would conduct no more above-ground nuclear tests.⁴³ The Court indicated that the French officials' statements had the force of law and that France must be bound by its decision not to conduct further tests.⁴⁴ The Court emphasized that a national representative's public, unilateral statements, either oral or written, made with the intent to be bound, even though not made in the context of negotiations nor to any particular state, are binding on the nation.⁴⁵ Although the Court did not decide whether customary

³⁹ Corfu Channel, 1949 I.C.J. 4 at 22.

⁴⁰ *Lake Lanoux Arbitration* (Fr. v. Spain), 12 R.I.A.A. 281, 24 I.L.R. 101 (Eng. 1957), reprinted in 53 AM. J. INT'L L. 156 (1959).

⁴¹ *Id.* at 160.

⁴² *Nuclear Tests (Austl. v. Fr.)*, 1974 I.C.J. 253 (Dec. 20); *Nuclear Tests (N.Z. v. Fr.)*, 1974 I.C.J. 457 (Dec. 20).

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *Id.*

international law would hold France responsible for the property and health damages of Australia or New Zealand, it may be inferred that France abandoned the nuclear tests because such law requiring a nation to use its resources in a way which does not interfere with another nation's environmental interests does exist.

Therefore, under the customary international principle that a nation should not interfere with another's environmental interests, a country may bring a law suit seeking damages for global warming against a nation which emitted carbon dioxide into the atmosphere. However, the complaining nation would have to establish a causal connection that its injuries associated with global warming were caused by the defendant state's carbon dioxide emissions.⁴⁶ Because global warming is a result of carbon dioxide emissions and deforestation by many nations, causation would be almost impossible to establish.⁴⁷ In reality, therefore, the plaintiff country needs a treaty to hold the defendant country liable for its emissions absent any showing of causation. For example, if the defendant country agrees to emit 100 tons of carbon dioxide per year and it emits 300 tons per year, it would be strictly liable to the treaty parties for damages resulting from the breach of its obligation.

B. International Agreements

1. The Stockholm Declaration

In 1972, the United Nations produced the Stockholm Declaration on the Human Environment.⁴⁸ Importantly, this declaration was the first international multi-lateral agreement to stress that a country is responsible for transboundary pollution, by asserting the customary principle of international environmental law articulated in the *Trail Smelter* and *Corfu Channel* cases.⁴⁹ In particular, Principle 21 of the Stockholm Declaration pronounced: "States have . . . the sovereign right to exploit their own resources . . . and the responsibility to ensure that activities within their jurisdiction and control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."⁵⁰ The Stockholm Declaration's pur-

⁴⁶ See Poirier, *supra* note 20, at 6.

⁴⁷ *Id.*

⁴⁸ Declaration of the United Nations Conference on the Human Environment (Stockholm Declaration), U.N. GAOR, U.N. Doc. A/Conf. 48/14/Rev.1 (1973), U.N. Pub. No. E.73.IIa.14 (1974), *reprinted in* 11 I.L.M. 1416 (1972).

⁴⁹ Faries, *supra* note 14, at 825.

⁵⁰ *Id.* at 826.

pose was to establish a framework to promote further international cooperation between nations as to specific environmental problems. After the Stockholm Declaration, the international community took strides towards developing international environmental law to govern air pollution. Because gaseous pollutants recognize no national boundaries,⁵¹ nations realized that isolated bilateral and trilateral treaties would not be an effective tool for creating cohesive international air pollution regulations. Therefore, the United Nations assumed the difficult task of creating several multilateral agreements in the hope that most countries would ratify them.

2. *Convention on Long-Range Transboundary Air Pollution*

Consistent with Principle 21 of the Stockholm Declaration, several nations entered into a Convention on Long-Range Transboundary Air Pollution⁵² in Geneva on November 13, 1979. The main goal of the Convention was to reduce sulfur emissions. Article 1 of the Convention recognized that long-range pollution was such that "it is not generally possible to distinguish the contribution of individual emission sources or groups of sources."⁵³ This language suggests that the signatories realized that a treaty was necessary because customary law would be inadequate to control pollution due to the difficulty encountered in proving causation under customary international law.

However, the agreement bound the signatories to "*as far as possible, gradually* reduce and prevent air pollution."⁵⁴ This qualified, vague language allowed nations to easily justify their noncompliance. For example, a nation would claim that reduction of sulfur dioxide emissions was not "possible" for numerous reasons. Because this agreement was in reality a recommendation rather than a firm obligation to reduce sulfur emissions, it has been termed "soft law."⁵⁵

3. *Vienna Convention for the Protection of the Ozone Layer*

In an effort to combat ozone depletion by CFC emissions, the United Nations hosted the 1985 Vienna Convention⁵⁶ for the Pro-

⁵¹ *Id.* at 823.

⁵² United Nations Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, T.I.A.S. No. 10,541 [hereinafter LRTAP], *reprinted in* 18 I.L.M. 1442, 1443. The LRTAP convention has been signed by the United States, Canada, the European Economic Community, and 35 Eastern and Western European Countries. Pallemmaerts, *supra* note 35, at 190.

⁵³ LRTAP, *supra* note 52, at art. 1.

⁵⁴ *Id.* at art. 2 (emphasis supplied in Pallemmaerts, *supra* note 35, at 191).

⁵⁵ Pallemmaerts, *supra* note 35, at 191.

⁵⁶ The Vienna Convention for the Protection of the Ozone Layer, *opened for*

tection of the Ozone Layer.⁵⁷ Out of forty-one countries in attendance, eighteen signed the Convention before the conference's close.⁵⁸ The Vienna Convention's purpose was to safeguard human health and the environment by deterring activities that have a destructive effect on the ozone layer through encouraging exchanges of information, research, and data among nations.⁵⁹

Because of a dispute between the "Toronto Group,"⁶⁰ which advocated an eighty percent reduction in the use of CFCs over a six year period, and the European Economic Community, which favored less demanding reduction obligations,⁶¹ the Convention did not adopt an agreement to control CFC production.⁶² In fact, similar to the Stockholm Declaration and the Convention on Long-Range Transboundary Air Pollution—neither of which imposes any stringent obligations on its signatories—the general language of the Vienna Convention did not bind the ratifying nations to any requirements for diminishing harmful CFC production or consumption.⁶³ The Convention merely called for continued negotiations towards producing a definite reduction agreement and suggested that nations independently control their CFC emissions.⁶⁴

signature Mar. 22, 1985, 26 I.L.M. 1529 (1986) (entered into force Sept. 1, 1988) [hereinafter Vienna Convention]. The key nations who ratified, accepted, approved, or acceded the Convention were as follows: the United States (Aug. 29, 1986), Canada (June 4, 1986), the Soviet Union (June 18, 1986), the United Kingdom (May 15, 1987), New Zealand (June 2, 1987), Mexico (Sept. 14, 1987), France (Dec. 4, 1987), Italy (Sept. 19, 1988), West Germany (Sept. 20, 1988), and the EC (Oct. 17, 1988). Kindt & Menefee, *supra* note 15, at 277-78 n.143. In addition, many smaller countries ratified the Convention, including several third world countries. *Id.* Because of its possible contribution to scientific research, both the United States' CFC industry and U.S. environmentalists supported the Convention. *Id.* at 277.

⁵⁷ Although ozone is an unhealthy pollutant that contributes to poor air quality on the earth's surface, stratospheric ozone which spans from six to thirty miles above the earth's surface is an essential part of our planet's viability. Faries, *supra* note 14, at 829. Stratospheric ozone is earth's only gas that prevents harmful ultraviolet solar radiation from reaching the earth's surface. *Id.*

⁵⁸ Kindt & Menefee, *supra* note 15, at 277.

⁵⁹ *Id.* at 278 (quoting Sand, *Protecting the Ozone Layer: The Vienna Convention is Adopted*, ENVIRONMENT, June 1985, at 19).

⁶⁰ This was a group of nations including the United States, Canada, Finland, Norway, and Sweden. Barbara K. Bucholtz, *Coase and the Control of Transboundary Pollution: The Sale of Hydroelectricity Under the United States-Canada Free Trade Agreement of 1988*, 18 B.C. ENV'T'L AFF. L. REV. 279 at 284 n.38.

⁶¹ Faries, *supra* note 14, at 829.

⁶² Kindt & Menefee, *supra* note 15, at 279.

⁶³ *Id.*

⁶⁴ *Id.*

Despite its failure to create a firm reduction schedule for CFCs, the Vienna Convention was successful in certain aspects. First, the Convention represented a multilateral recognition and definition of the phenomenon of ozone depletion and advocated a future concrete solution to the problem.⁶⁵ Also, the Convention called for the ratifying parties to cooperate in ozone research by sharing technology and data.⁶⁶ Notably, several commentators⁶⁷ suggested that because the purpose of the Vienna Convention was not to hurriedly derive a solution to the ozone problem but rather to create a framework for subsequent negotiations to formulate international regulations, the finished product was a success.

4. *Montreal Protocol on Substances that Deplete the Ozone Layer*

Coincidentally, a few months after the Vienna Convention, several British scientists reported an "ozone hole"⁶⁸ over Antarctica.⁶⁹ Stratospheric ozone is the only gas that prevents harmful ultraviolet solar radiation, which causes skin cancer, from reaching the earth's surface.⁷⁰ Thus, after the discovery of the hole, scientists predicted that an increased amount of harmful radiation would reach the earth's surface, causing an increase in the number of skin cancer cases. In addition, increased levels of UV-B radiation⁷¹ would penetrate many meters below the oceans' surface, killing the phytoplankton and krill at the base of the oceanic food chain.⁷² The public's adverse reaction to the "ozone hole" returned the depletion of the ozone layer to the forefront of many nations' political agenda.⁷³ Thus, in 1987, twenty-four countries signed the Montreal Protocol on Substances That

⁶⁵ Faries, *supra* note 14, at 829.

⁶⁶ Kindt & Menefee, *supra* note 15, at 279.

⁶⁷ E.g., Faries, *supra* note 14, at 829; Ogdan, *supra* note 15, at 1002.

⁶⁸ Normally, ozone is found in the earth's stratosphere. However, where there is an absence or severe depletion of ozone in a certain area, scientists have termed this area an "ozone hole."

⁶⁹ The hole in the stratospheric ozone would open over the Antarctic pole in September and close in mid-October. Each year the scientists measured less ozone in the hole, and by 1985 the ozone measurement was half of what it had been in the previous decade. Kindt & Menefee, *supra* note 15, at 280 (citing Taubes & Chen, *Made in the Shade?*, DISCOVER, Aug. 1987, at 62, 64).

⁷⁰ Michael D. Lemonick, *The Ozone Vanishes*, TIME, Feb. 17, 1992 at 61.

⁷¹ UV-B are the most dangerous ultraviolet rays. *Id.*

⁷² *Id.*

⁷³ Kindt & Menefee, *supra* note 15, at 281.

Deplete the Ozone Layer (Montreal Protocol or Protocol).⁷⁴ This Protocol was the first international agreement to set specific pollution reduction obligations on participating nations.⁷⁵ It set dates for the reduction of CFCs⁷⁶ and halons, gaseous substances that escape into the earth's stratosphere and attack the ozone layer.⁷⁷

Specifically, the Protocol provided that each ratifying nation must reduce its consumption and production of the defined controlled substances⁷⁸ to 1986 levels by July 1989.⁷⁹ In addition, the Protocol required each party to reduce its use and production of CFCs by an additional twenty percent by July 1, 1993.⁸⁰ Further, the regulations provided that each party must reduce its production and consumption another thirty percent by 1998⁸¹ and that halon production and consumption remain at 1986 levels beginning in 1992.⁸²

Although the agreement mandated the dates for reduction obligations, individual governments were allowed to choose their own methods for phasing out the gases.⁸³ The Montreal Protocol drafters

⁷⁴ See Montreal Protocol, *supra* note 14. The signatories included Belgium, Canada, Denmark, Egypt, Finland, France, the Federal Republic of Germany, Ghana, Italy, Japan, Kenya, Mexico, the Netherlands, New Zealand, Norway, Panama, Portugal, Senegal, Sweden, Switzerland, Togo, the United Kingdom, the United States, and Venezuela. The EC was also a signatory. Each of these countries, with the exception of Senegal and Togo, ratified or accepted the Protocol. Also, the Soviet Union ratified it. Kindt & Menefee, *supra* note 15, at 282-83 n.187.

⁷⁵ Dohse, *supra* note 35, at 203.

⁷⁶ For discussion of CFCs, see *supra* note 15.

⁷⁷ As of August 2, 1990, sixty-three countries had ratified the Montreal Protocol. These countries represent over 90% of the consumption and over 99% of the production of ozone-depleting chemicals. Elizabeth P. Barratt-Brown, *Building a Monitoring and Compliance Regime Under the Montreal Protocol*, 16 YALE J. INT'L L. 519, 520-21 (1991).

⁷⁸ "Controlled substances" were defined in Article 1 of the Montreal Protocol as various CFCs and halons, which are listed in Annex A to the Protocol. See Montreal Protocol, *supra* note 14, at 26 I.L.M. 1551, 1561, 52 Fed. Reg. at 47,515, 47,519.

⁷⁹ Barratt-Brown, *supra* note 77, at 533. Each nation's computation was production plus imports minus exports of halons and CFCs within its borders. Hahn & McGartland, *supra* note 15, at 595.

⁸⁰ Hahn & McGartland, *supra* note 15, at 595.

⁸¹ Therefore, by 1998 the parties' production and consumption will be reduced by a total of 50%, based on 1986 levels. *Id.* at 596.

⁸² *Id.*

⁸³ Barratt-Brown, *supra* note 77, at 532. For example, in 1990, the United States Congress passed a new Clean Air Act that called for strict controls of CFCs and other ozone-depleting chemicals. *Id.* at 532 n.71 (citing Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 601-18, 104 Stat. 2649 (1990)).

chose this flexible⁸⁴ approach to entice countries concerned with their autonomy into becoming signatory parties.⁸⁵ In addition, the drafters included several exceptions and trade restrictions in the Protocol for the purpose of maximizing global participation.⁸⁶

To induce the Soviet Union to become a signatory, the Protocol drafters designed Article 2(6).⁸⁷ This exception "allows developed nations which had begun construction on, or contracted for, [CFC] production facilities prior to September 16, 1987, to add the production of all facilities completed before December 31, 1990 to their 1986 levels."⁸⁸

The drafters created Article 5 to target less developed countries (LDCs).⁸⁹ These countries, from the date of ratifying the Protocol, obtain a ten year delay for compliance with the regulations.⁹⁰ Thus, after signing the agreement, a less developed country may continue to produce and consume CFCs at the same rate while industrialized countries are forced to reduce their levels of production and consumption. By allowing an LDC to produce CFCs without a reduction schedule, the country's citizens have an opportunity to purchase some of the many consumer items, such as air conditioners, refrigerators, and personal computers, which contain CFCs.⁹¹

Article 2 also allowed for flexibility by giving countries who produced less than twenty-five kilotons of the controlled substances during 1986 a transferable right to CFC production.⁹² Signatory parties may purchase or trade for another party's transferable right of CFC production.⁹³ Therefore, although a developing nation may not have the capacity to produce CFCs, it possesses a right to produce, to

⁸⁴ Allowing individual nations to decide how to reduce CFCs is flexible because, as an illustration, one nation may choose to ban aerosol sales while another may choose to stop production of computer chips.

⁸⁵ Barratt-Brown, *supra* note 77, at 532.

⁸⁶ Faries, *supra* note 14, at 831-34.

⁸⁷ *Id.* at 831.

⁸⁸ *Id.*

⁸⁹ LDCs or "developing countries" were defined in the Protocol as countries with an annual calculated level of consumption of controlled substances that is less than 0.3 kg per capita. *Id.* at 834; Montreal Protocol, *supra* note 14, at art. 5.

⁹⁰ However, the Montreal Protocol imposes a ceiling of 0.3 kg per year in consumption of CFCs and halons per capita. Ogden, *supra* note 15, at 1006 n.61; Montreal Protocol, *supra* note 14, at art. 5.

⁹¹ *Id.* at 1005; Kindt & Menefee, *supra* note 15, at 286.

⁹² Kindt & Menefee, *supra* note 15, at 284.

⁹³ *Id.*

which attaches an economic value.⁹⁴ The drafters believed that allowing nations to freely trade these "rights" would not disrupt the goal of reduced total global CFC production.⁹⁵

Moreover, the Montreal Protocol included trade restrictions to entice uncertain and unwilling countries to participate in the agreement. Article 4 required that by 1993 the Protocol parties may not import "controlled substances" from non-parties.⁹⁶ By limiting the trade of controlled substances to the member parties, the drafters hoped to encourage each country to participate in the Protocol and to curb the overall global production of CFCs.⁹⁷

A chief weakness of the Montreal Protocol is its monitoring and compliance mechanism. The Protocol vested the United Nations Environment Program (UNEP) Secretariat with the responsibility of monitoring every nation's adherence to the treaty,⁹⁸ yet required that each nation submit its own regulatory data to UNEP.⁹⁹ Furthermore, because the Secretariat has been understaffed and in need of funding, the agency has not been able to verify the data it receives or force a delinquent nation to submit any data.¹⁰⁰

In 1990, the Montreal Protocol parties met in London and agreed on amendments to the Protocol,¹⁰¹ which take effect after each nation individually ratifies them. The amendments seek to phase out rather than reduce production of CFCs and frozen halons by the year 2000.¹⁰² In addition, the amendments provide for a multilateral fund of \$160 to \$240 million to prompt developing countries to sacrifice the ten year delay and adopt the same reduction schedule as the developed countries.¹⁰³ By paying the developing countries' costs incurred for

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.* at 285.

⁹⁷ Faries, *supra* note 14, at 833.

⁹⁸ Barratt-Brown, *supra* note 77, at 542.

⁹⁹ *Id.*

¹⁰⁰ In May of 1990, fifty-five nations were required to submit data to the UNEP Secretariat. Only twenty-one countries submitted complete data. *Id.* For a critical discussion of the Montreal Protocol's compliance mechanism and alternative suggestions, see *id.* at 542-70.

¹⁰¹ *Id.* at 535. However, these amendments do not suggest an alternative monitoring mechanism to ensure that signatory countries comply with the Protocol.

¹⁰² *Id.*

¹⁰³ To determine this figure, the EPA estimated the incremental costs per year for less developed countries' compliance. *Id.* at 535 n.86. The fund is made up of donations from Western developed countries. However, as of September 20, 1991 only \$9 million had been deposited. *How to Best Attack Global Warming*, CHRISTIAN SCI. MONITOR, Sept. 20, 1991, at 20, col. 5.

their premature compliance with the Montreal Protocol, the fund attempts to reduce the LDCs' incentives to continue trading the controlled substances.¹⁰⁴ Thus, the fund should "have an enormous impact on the rate that ozone-depleting chemicals disappear from the global market."¹⁰⁵

III. ANALYSIS

A. Other Nations Are Concerned About the United States' Reluctance to Reduce Carbon Dioxide Emissions

After ratifying the 1987 Montreal Protocol and agreeing to reduce CFCs, the United States has apparently lost interest in taking international action to reduce other greenhouse gases.¹⁰⁶ In July of 1991, the United States refused to support a G-7¹⁰⁷ commitment for the reduction of carbon dioxide, the principle greenhouse gas.¹⁰⁸ As of September 1991, the Bush Administration continued to advocate that, even without a reduction schedule for carbon dioxide emissions, the international agreement to phase out CFCs and market-driven increases in energy use efficiency would significantly reduce greenhouse gas emissions this decade.¹⁰⁹

¹⁰⁴ Barratt-Brown, *supra* note 77, at 535.

¹⁰⁵ *Id.*

¹⁰⁶ Notably, on the last day of the February preparatory conference for the 1992 UNCED, the United States began to show signs of international cooperation towards reducing carbon dioxide emissions. The chief U.S. negotiator, Robert A. Reinstein, declared that the United States would promote emission reductions through domestic legislation, which will foster energy efficiency and alternative fuel use by both individuals and industries. *Global Warming Talks End With Impasse*, Facts on File World News Digest (Mar. 5, 1992). In addition, the Bush Administration reversed its earlier policy by pledging that the United States will donate \$75 million to assist third world countries to curb their emissions. *Id.* However, some environmentalists fear that these actions represent mere "election-year posturing." *Id.*

At the February conference, the United States maintained its objection to an international treaty. Because the United States believes that it would suffer more than other countries due to its widespread transportation system, it asserts that nations should develop their own greenhouse gas reduction plans, rather than adhering to international regulations. *Global Warming Treaty Work Will Be Mostly Refining Language, Chairman Says*, 15 Int'l Env't. Rep. (BNA) No. 4, at 91 (Feb. 26, 1992).

¹⁰⁷ See *CO2/G-7 Summit: U.S. Prevails on G-7 as Summit Concludes With No Commitment to Curb Carbon Dioxide*, *supra* note 26.

¹⁰⁸ *Id.*

¹⁰⁹ *How to Best Attack Global Warming*, *supra* note 103. The Bush Administration accepts the U.S. National Academy of Sciences recommendation that if U.S. citizens would use new efficient water heaters, refrigerators, light bulbs, and drive fuel-efficient cars, greenhouse gases would decline by 15%. *Id.* The problem with this recommendation is that consumers have neither the incentive nor the money to buy new water heaters, refrigerators, and cars.

In 1992, on the twentieth anniversary of the Stockholm Declaration, at the United Nations Conference on the Environment and Development (UNCED) in Rio de Janeiro, Brazil, the United Nations Environment Program will push for a multilateral treaty on climate change, which will involve a schedule for the reduction of carbon dioxide emissions.¹¹⁰ Several nations, including Canada¹¹¹ and most of those in the European Community, support this proposed treaty.¹¹² In addition, non-governmental organizations support the treaty. For example, the American Bar Association passed a resolution that urges each nation of the world and the United Nations to develop long-term strategies to preserve the environment.¹¹³ The ABA resolution stresses that although the extent and impact of climate change is unsettled and the probability is low, the magnitude of loss that will be caused by global warming is so great that the problem should command our present attention.¹¹⁴

After the 1991 G-7 summit, the nations and organizations which support a global warming treaty fear that the United States will not ratify a 1992 carbon dioxide reduction agreement. Because carbon dioxide emissions are transboundary pollution and the United States is the largest emitter of carbon dioxide, they fear that an international environmental treaty will not succeed without the United States' support.¹¹⁵

These other nations have two well-founded reasons to be concerned about the treaty's future. First, many countries, especially third world nations, are influenced politically and economically by the United

¹¹⁰ *UNEP to Use 1992 Conference as Platform to Stress Threat Posed by Global Warming*, 14 Int'l Env't. Rep. (BNA) No. 12, at 339 (June 19, 1991).

¹¹¹ Canadian Prime Minister Brian Mulroney stated the need for an agreement which focuses on conservation of the marine environment and fisheries. *U.S. Prevails on G-7 as Summit Concludes With no Commitment to Curb Carbon Dioxide*, Int'l Env't. Daily (BNA) (July 18, 1991).

¹¹² German Chancellor Helmut Kohl stressed the need for an agreement to combat the greenhouse effect, as well as protect the ozone layer and rain forests. *Id.*

¹¹³ Poirier, *supra* note 20. A significant contrast with the ABA's position is that of the Bush Administration, which has resisted the long-term strategy of a carbon dioxide reduction commitment.

¹¹⁴ The burden (B) of preventing global warming is most likely less than the probability of the occurrence of climate change multiplied by the magnitude of the resulting loss (PL). *Id.* (referring to Learned Hand's formula).

¹¹⁵ Furthermore, other countries may not be willing to restrict their carbon dioxide emissions if part of the world does not, because the nations who adhere to a treaty will have to "reduce their reliance on certain resources," pay for a higher priced fuel, and as a result be less competitive in global markets. John B. Nicholson, *Recent Development*, 21 GA. J. INT'L & COMP. L. 285, 302 (1991).

States and may follow the United States' lead and fail to ratify the treaty.¹¹⁶ Second, because air pollution does not recognize political boundaries and the United States is the largest emitter of carbon dioxide, the United States' carbon dioxide emissions will continue to raise the global temperature.¹¹⁷ Thus, a global warming treaty ratified by only a segment of the world's nations will at best slow down, rather than prevent, the warming trend. Notably, if several developing countries with high populations (such as China with approximately one billion people) begin to burn fossil fuels at a rate comparable to the United States' consumption rate,¹¹⁸ the resulting carbon dioxide emissions will nullify any industrialized countries' efforts of reduction.¹¹⁹

In both the Vienna Convention and the Montreal Protocol, the United States pledged its support for the protection of the ozone layer and promptly ratified each document.¹²⁰ Although both of these agreements were for the reduction of CFC emissions, they recognized that the substances which attack the ozone layer also adversely affect the earth's climate.¹²¹ By ratifying these documents, the United States implicitly agreed that a change in climate may result from the emission of certain gaseous substances. To prevent further global warming, the United States should remain a leader in the development of international environmental law and support its recognition that cli-

¹¹⁶ See *Concerted Effort to Address Climate Change Deserves Urgent Global Priority, Report Says*, *supra* note 31.

¹¹⁷ Faries, *supra* note 14, at 823.

¹¹⁸ United States' citizens waste energy. In 1987, the United States emitted 5.03 tons of carbon per capita. FLAVIN, *supra* note 4, at 26. Canada emitted 4.24 tons per capita, West Germany emitted 2.98 tons per capita, and Japan emitted 2.12 tons per capita. *Id.* America's per capita greenhouse gas emissions are more than five times those of China, India, and Brazil. *Missing the Global Warming Target*, BOSTON GLOBE, Sept. 15, 1991, at A26.

¹¹⁹ A Worldwatch Institute Report predicts that China, India, and Brazil will triple their emissions by 2025 if no steps are taken by industrialized countries to transfer energy saving technology to them. *Missing the Global Warming Target*, *supra* note 118, at A26. However, a technology transfer proposal has little support from the Bush Administration. *Id.*

¹²⁰ In fact, after the Senate unanimously consented to the treaty, the United States was the second country, and the first major CFC producing country, to ratify the Montreal Protocol. Hahn & McGartland, *supra* note 15, at 596.

¹²¹ The Vienna Convention states that an adverse effect of ozone depletion includes changes in climate. See Vienna Convention, *supra* note 56, at 26 I.L.M. 1529. In addition, the Montreal Protocol provides that the parties to the Protocol are "conscious of the potential climatic effects" of the emission of certain substances. See Montreal Protocol, *supra* note 14, at 26 I.L.M. 1550, 52 Fed. Reg. at 47,515.

mate change is a threat by agreeing to reduce carbon dioxide emissions.

B. The United States Blames Its Reluctance to Reduce Carbon Dioxide on Economic Hardship and a Lack of Scientific Evidence

To explain its failure to commit to a carbon dioxide reduction at the 1991 G-7 summit, the United States stated that not enough conclusive scientific research¹²² on carbon dioxide's effect on global warming had been documented to justify stifling economic growth with strict environmental policies.¹²³ However, scientists attending a National Energy Resources Organization conference agreed that the scientific community will never reach a consensus on global warming.¹²⁴ Therefore, by claiming "no conclusive scientific evidence" exists, the United States can avoid a reduction of carbon dioxide emissions indefinitely. Postponement of efforts to combat global warming will likely result in economic disaster, such as bankruptcy of fishing industries and destruction of coastal cities.¹²⁵ Thus, although the burden of reducing global warming may be significant, even a slight chance of extensive damage caused by a rise in the earth's temperature outweighs any present economic burden and justifies a preventative approach.

The United States' explanation is questionable in light of the similar availability of insufficient scientific research at the negotiations of the Montreal Protocol. Even though scholars continued their debate as to what effect a decreasing ozone layer would have on our planet and to what extent CFCs reduced the ozone layer,¹²⁶ the United States ratified the Montreal Protocol¹²⁷ and thus implicitly recognized that a definite scientific accord was not necessary to permit the nation to actively prevent ozone depletion by reducing CFC emissions.

¹²² *U.S. Prevails on G-7 as Summit Concludes With No Commitment to Curb Carbon Dioxide*, Int'l Env't. Daily (BNA) (July 18, 1991); *Document Implies U.S. Summit Position Will Oppose Greenhouse Gases Timetable*, 13 Int'l Env't. Rep. (BNA) No. 6, at 229 (June 13, 1990).

¹²³ *Industrialized Nations Decline to Commit to Concrete Steps to Curb CO₂ and Other Gases*, 13 Int'l Env't. Rep. (BNA) No. 8, at 321 (Aug. 8, 1990).

¹²⁴ *Implications of Global Climate Change Said to Dominate Policymaking in 1990s*, 12 Int'l Env't. Rep. (BNA) No. 11, at 538 (Nov. 8, 1989). See *infra* note 129.

¹²⁵ See *supra* notes 8-10 and accompanying text.

¹²⁶ *Faries*, *supra* note 14, at 821.

¹²⁷ *Hahn & McGartland*, *supra* note 15, at 592; *Kindt & Menefee*, *supra* note 15, at 265.

In comparison, although scientists continue to debate about the extent of the global warming phenomenon, documented evidence shows that carbon dioxide is the principle cause of the greenhouse effect.¹²⁸ The United States should not retreat from its Protocol position that an agreement to reduce a harmful gas may be reached notwithstanding scientific debate about the degree of potential harm the gas could cause. At the June 1992 world conference, in order to protect the earth's environment, the Bush Administration needs to commit to reduce carbon dioxide levels and allow for a flexible reduction schedule to adjust for new scientific discoveries.¹²⁹

C. Economics as a Force in the United States' Opposition of a G-7 Commitment to Reduce Carbon Dioxide

Because the United States is the world's leading carbon dioxide polluter and possesses a large percentage of the world's coal reserves,¹³⁰ its failure to commit to a reduction of carbon dioxide is based heavily on feared economic repercussions of an emissions reduction. The United States economy is powered by fossil fuels. Thus, without comparably priced alternative fuel sources, any reduction in the United States' use of carbon fuels will slow down its economic development.

As evidence of its economic concerns, the Bush Administration urged the world to give the United States special consideration in any international agreement to reduce carbon dioxide emissions because of America's "energy use profile."¹³¹ In other words, due to its suburban sprawl, United States citizens rely on motor vehicles to a greater extent than other countries.¹³² Thus, an evenhanded reduc-

¹²⁸ See FLAVIN, *supra* note 4, at 13; Rae Tyson, *Pushing the Clean Air Act Among Pluses*, U.S.A. TODAY, Sept. 18, 1991, at A2, col. 1.

¹²⁹ Admittedly, the economic burden of reducing CFCs was not as great as the upcoming burden of reducing carbon dioxide emissions. Arguably, the higher cost of reducing carbon dioxide justifies holding off on a definite reduction decision pending any conclusion to scientific debate. However, today the scientific debate is about *when* a global warming disaster will occur rather than *if* it will transpire. See *Implications of Global Climate Change Said to Dominate Policymaking in the 1990s*, *supra* note 124, at 538.

¹³⁰ The United States produces about 22% of the world's carbon dioxide and the United States, India, China, Mexico, and the Soviet Union possess 90% of the world's coal reserves. *U.S. Conference Notes Factors Linked to Global Climate Change*, 11 Int'l Env't. Rep. (BNA) No. 12, at 679 (Dec. 14, 1988).

¹³¹ *Missing the Global Warming Target*, *supra* note 118, at A26.

¹³² *Id.* However, perhaps the Bush Administration or Congress should encourage United States citizens to carpool and should implement other programs designed to

tions treaty will burden the United States more than other nations. However, third world nations view the United States' vehicle emissions as "luxury emissions." At the negotiations for a world treaty on climate change, third world nations will not treat America's lobby for "luxury emissions" with favor. Because their greenhouse gas emissions are byproducts of survival activities, such as raising cattle, growing rice, and burning forests,¹³³ third world nations believe that the United States should sacrifice its "luxury emissions" before they should be forced to implement drastic reductions.¹³⁴ Third world nations believe in the "polluter pays" principle and will argue that the industrial nations who emit most of the carbon dioxide should pay the price of global warming.¹³⁵

As an alternative to a full-scale carbon dioxide reduction, the United States could adopt the "no regrets" greenhouse policy. This strategy, introduced by the National Academy of Sciences, suggests the reduction of carbon dioxide emissions only where the cost of doing so

lessen their reliance on automobiles. For example, the United States could spend income created by a carbon tax to build and promote high speed public railways. As citizens begin to use the mass transit system rather than each driving their own fossil-fueled vehicle, per capita consumption of carbon dioxide will fall. Interview with Thomas Schoenbaum, University of Georgia School of Law Professor and Director of the Dean Rusk Center for International and Comparative Law, in Athens, Georgia (Jan. 17, 1992) [hereinafter Schoenbaum Interview].

¹³³ *Missing the Global Warming Target*, *supra* note 118, at A26.

¹³⁴ For many reasons, third world countries are in a particularly bad situation. Most are heavily burdened in debt and are "extracting natural resources beyond sustainable levels to obtain cash from exports." R. Paul Shaw, *Shackles on International Environmental Development and Cooperation*, 14 Int'l Env't. Rep. Current Rep. (BNA) No. 2, at 53 (Jan. 30, 1991). In the next forty years, more than 90% of the world's population growth will occur in third world countries. *Id.* This will increase those countries' need for economic growth. *Id.* Although they are aware of the greenhouse effect, third world countries also know that carbon fuels were essential to the growth of richer industrialized countries. *Id.* Therefore, rapid population growth, poverty, and the drive of third world countries to immediately increase their economic growth are clearly in conflict with the global concern of preserving our environment. At the 1992 United Nations Conference on the Environment and Development, third world countries will oppose any measures that will reduce their economic growth, and without a monetary fund to give them support, they likely will not agree to a treaty.

¹³⁵ India and China are influencing many developing countries to argue that the European Community, Japan, and the United States should finance the burden of global reduction of carbon dioxide emissions, "because those countries created global warming through their mass consumption habits." *Analysis: Trying to Heat Up the Global Warming Talks*, Greenwire, Sept. 26, 1991, available in LEXIS, Nexis Library, Omni File.

is relatively cheap.¹³⁶ For example, in terms of cost effectiveness, the Academy recommends that the energy efficiency of buildings and the fuel efficiency of automobiles be improved.¹³⁷ The “no regrets” greenhouse policy advises people and businesses not to take expensive preventative measures to reduce global warming but rather to spend money to adapt as the global temperature rises.¹³⁸ However, avoiding an aggressive approach is risky because the economic cost of adaptation to climate change, in addition to the invaluable intangibles of the losses of human life, wildlife,¹³⁹ natural resources, and aesthetic beauty of our planet, is likely to be much greater than the cost of currently implementing preventative measures. Thus, world leaders need to adopt and abide by a carbon dioxide reduction treaty as an insurance policy; to invest now in order to reduce a greater future risk.¹⁴⁰

D. United States' Economic Dilemma: Short-term Slump versus Long-run Disaster

In the inevitable struggle between the environment and economy, inconsistencies in the United States' policies have unfolded. In 1987, in an effort to prevent an increase in skin cancer cases,¹⁴¹ the United States agreed to implement the Montreal Protocol for the Protection

¹³⁶ Peter Passell, *Economic Scene: Warmer Globe, Greener Pastures?*, N.Y. TIMES, Sept. 18, 1991 at D2, col. 1.

¹³⁷ *Global Warming: The Experts Speak*, THE ECONOMIST, Apr. 13, 1991, at 26, 31.

¹³⁸ Passell, *supra* note 136.

¹³⁹ A World Wildlife Fund study predicts that the quick pace of global warming, rather than the actual temperature rise, will threaten to destroy many ecosystems. Linda Kanamine, *Bush, Industry Cool to Calls for Tough Global Warming Controls*, U.S.A. TODAY, Feb. 18, 1992, at 8B, col.3. For example, many endangered species such as marine turtles, migratory birds, polar bears, and the Florida panther will not be able to adapt to rapid habitat damage. *Id.*

¹⁴⁰ In February of 1992, after new evidence showed that the ozone layer is disappearing faster than anyone expected, the United States Senate voted 96-0 to phaseout CFCs at a faster rate. Michael D. Lemonick, *The Ozone Vanishes*, TIME, Feb. 17, 1992, at 60, col. 3. See *NASA Expedition Findings Predict Increased Ozone Depletion Over Arctic*, 15 Int'l Env't. Rep. (BNA) No. 3, at 59 (Feb. 12, 1992) (James Anderson, a Harvard University Professor of chemistry and project scientist with NASA, stated that the news of the quickly disappearing ozone ranks an 8 on a scale of 10, where 10 is the most alarming). The United States should realize that a global warming disaster has the same potential to arise rapidly. Thus, a preventative approach to global warming is necessary to protect against a sudden, unexpected temperature rise.

¹⁴¹ *Cool It; Stuck in the Greenhouse*, ECONOMIST NEWSPAPER LTD., Aug. 31, 1991, at 28.

of the Ozone Layer by reducing CFC production and consumption. Because CFC substitutes are more expensive than CFCs, the United States chose to force consumers to pay higher prices¹⁴² for environmentally safe products. Recently, by rejecting a commitment for carbon dioxide reduction, the United States regressed on its environmental policy by choosing a short-term goal of economic development over the future, yet imminent, threat of global warming.

Admittedly, if the United States implements a carbon dioxide reduction schedule in 1992, a downturn in the free-market economy is highly possible. Because industries must finance pollution reduction equipment¹⁴³ and a possible pollution tax,¹⁴⁴ the price of goods which involve carbon dioxide in their production, which includes almost every product that is transported by a carbon-fueled vehicle, will presumably rise.¹⁴⁵ Fewer individuals will be able to afford higher priced goods, and consequently consumer demand will fall. With less demand, companies may have to lay off the American workers who assemble or supervise production of these products.

However, reduced consumer spending and higher unemployment, which may result from the internalizing of environmental costs of products,¹⁴⁶ is more desirable than the alternative. If the world economy continues to revolve around fossil fuels in anticipation of adapt-

¹⁴² This assumes that CFC industries internalized the higher component input prices, which raised the final consumer price tags.

¹⁴³ The U.S. Department of Energy's interim report of the National Energy Strategy projected that it would cost the U.S. "about \$1 trillion to stabilize and then reduce CO[2] emissions through-out the next century." *Interim National Energy Strategy Unveiled by U.S. Energy Secretary*, 13 Int'l Env't. Rep. (BNA) No. 4, at 164 (Apr. 11, 1990).

¹⁴⁴ A carbon tax on the burning of any fossil fuel will create the incentive for industry to burn less carbon and to switch to cleaner fuel sources. Schoenbaum Interview, *supra* note 132.

¹⁴⁵ Two major power companies in southern California, Pacific Gas and Electric and Southern California Edison, have recently promoted—and paid for—increased energy efficiency measures for buildings throughout entire communities. Though such energy conservation programs cost millions, the companies have in fact saved millions more by reducing demand for fossil fuel consumption in the production of electricity, which would have been met by building new power plants (and increasing carbon dioxide emissions) in the absence of conservation incentives. *Show: World News Tonight With Peter Jennings*, ABC News Broadcast, Feb. 18, 1992, available in LEXIS, Nexis Library, Currnt File.

¹⁴⁶ Notably, in a free market, when alternative fuel sources are available at reasonable prices, the cost of producing the end product will decline. Because of the lower price, consumer demand will rise and more workers will be hired for production. It is in the interim where carbon fuel is high priced and alternative fuels are not available at affordable prices that the economy will suffer.

ing to any rise in temperature, the costs of dealing with both the destruction of coastal cities caused by a rise in sea level and the starvation of much of the world's population caused by alterations in agricultural conditions will likely be much greater than the cost of a short-term economic slump.

The United States will have a tough decision to make at the United Nations Conference on the Environment and Development in 1992.¹⁴⁷ If the United States supports the international push for carbon dioxide reductions, its economy will suffer in the short-run while cleaner fuel sources are being developed. If American voters are not persuaded that action is needed to prevent global warming, they will not accept an economic slump and could vote out the incumbents. The fear of losing their offices as a result of an economic slump may prompt some politicians to pressure the United States' delegation to reject a global warming treaty. In addition, it is in the interest of several industrial giants, such as domestic automobile manufacturers and oil companies, to oppose any reduction of carbon fuels. Thus, many corporations may promote and support United States opposition to the 1992 treaty. However, if the United States rejects the international treaty, the economic consequences of "no regrets" adaptation most likely will be worse.¹⁴⁸ Therefore, the United States should opt for preventative measures rather than higher curative costs.¹⁴⁹

If environmental ideals prevail over short-term economic values and the United States chooses to support a carbon dioxide reduction schedule in the 1992 global warming treaty, the United States can

¹⁴⁷ Dr. Mostafa Tolba, Executive Director of the United Nations Environment Program, stated that the issue of climate change "is among the more difficult, complicated, and challenging issues ever tackled by the world community." *Environment Secretary Pattern Says Britain Wants to See Climate Change Treaty by 1992*, 13 Int'l Env't. Rep. (BNA) No. 7, at 282 (July 11, 1990).

¹⁴⁸ Because short-term goals led to the tremendous increase in the national deficit between 1982 until the present, United States officials should have learned a lesson in long-term planning. See ALDRICH ET. AL., *AMERICAN GOVERNMENT: PEOPLE, INSTITUTIONS, AND POLICIES* 671 (1986) (Reagan's first budget increased the national debt from \$57.9 billion to \$110.7 billion, which was the first time in history that the deficit surpassed \$100 billion).

¹⁴⁹ Professor Schoenbaum predicts that the United States will adopt the "no regrets" approach. He stressed that U.S. politicians will not implement a carbon tax because it is political suicide. Schoenbaum Interview, *supra* note 132.

However, the Federal government could emulate several states which have implemented environmental strategies in spite of the risk to the incumbents. For example, in July of 1989, Oregon enacted a law requiring a 20% reduction of greenhouse gases by 2005. FLAVIN, *supra* note 4, at 50.

take solace in three facts in the event of an economic downturn. First, because most of the world's nations are also dependant on fossil fuel, other countries will experience similar economic problems in their search for alternative, inexpensive energy sources. Notably, the threat of a short-term economic slump has not inhibited the European Community, who is also dependant on fossil fuels. The European Community was the first political body to propose a clean energy tax. European countries have begun debating over proposals that desire a surcharge of \$10 a barrel on oil, \$14 on an equivalent amount of coal, and \$5 on an equivalent amount of nuclear power by the year 2000.¹⁵⁰ Importantly, West Germany has adopted a policy of reducing carbon dioxide emission levels by 25 percent from 1987 levels by the year 2005.¹⁵¹

Second, the United States can be assured that if it reduces its carbon dioxide emissions, entrepreneurs as well as established companies will respond to the demand for renewable energy sources—such as solar, wind, and geothermal—and create job opportunities for displaced fossil fuel workers.¹⁵² In fact, global markets have already begun to react to environmental concerns. In Japan, environmental research and development departments are a recognized and important part of corporate activity.¹⁵³ Japanese companies have realized that they can simultaneously profit from environmental problems and improve their public image.¹⁵⁴ Also, in the United States, automobile manufacturers are racing to create a zero-emission vehicle.¹⁵⁵ Finally and perhaps most importantly, the United States can

¹⁵⁰ Paul L. Montgomery, *Heavy Energy Tax is Proposed to Curb Emissions*, N.Y. TIMES, Sept. 26, 1991, at D3, col. 1. France is the first nation to actually institute a tax on air pollution. However, the tax is on sulfur dioxide emissions only. Dohse, *supra* note 35, at 208.

¹⁵¹ Dohse, *supra* note 35, at 208.

¹⁵² A new environmental protection market should be created, which in turn would create new employment opportunities. Nicholson, *supra* note 114, at 302. See also E.S. Browning, *Europe Reaps "Green Movement" Profits: Entrepreneurs Find Opportunity in Their Environment*, WALL ST. J., Aug. 26, 1991 (green markets are in their infancy stage and will bring many economic opportunities).

¹⁵³ See Yoshiaki Itoh, *Firms Hoist Green Standard, From Tree Planting to Clean Air*, NIHON KEIZAI SHIMBUN, Sept. 24, 1991, at 1.

¹⁵⁴ *Id.*

¹⁵⁵ California's pollution control laws will require that an automobile manufacturer sell at least 2% of its total car sales as zero-emission vehicles in 1998. Edward K. Miller, *Drive to Cut Pollution Electrifies the Auto Industry*, U.S.A. TODAY, Oct. 3, 1991, at E7, col. 2.

be confident that by taking long-term action¹⁵⁶ and responsibly incurring preventative costs, our country and the world community will undeniably benefit by a cleaner, safer planet.¹⁵⁷

E. Legal Framework for a 1992 Global Warming Treaty

The United States must agree to reduce carbon dioxide emissions in order to demonstrate, rather than merely declare, its environmental concerns. By implementing the Montreal Protocol to combat ozone depletion, the United States agreed to reduce CFCs (a greenhouse gas) and thus took one step towards the prevention of global warming.¹⁵⁸ A treaty which calls for the halt of deforestation and for the reduction of other greenhouse gases, specifically carbon dioxide and perhaps methane, is the next necessary step in reducing the greenhouse effect. If the drafters of a global warming treaty build on past international air pollution law, the treaty could be an enforceable, strict agreement.

Historically, because the French government proclaimed its intention to cease atmospheric nuclear testing, the International Court of

¹⁵⁶ Ironically, after the Montreal Protocol, U.S. Environment Protection Agency Administrator Lee Thomas commended the UNEP director for keeping all of the nations' "eyes fixed on the ultimate objective—protection of the environment—and to avoid seeking short-term economic gains or political advantages." *International Agreement to Protect the Ozone Layer Hailed as Precedent for Global Environmental Solutions*, 10 Int'l Env't. Rep. (BNA) No. 10, at 531 (Oct. 14, 1987).

¹⁵⁷ To the United States' credit, on June 18 and 19, 1991 a bill entitled "CO₂ Offsets Policy Efficiency Act of 1991" was introduced in the Senate and House of Representatives. Joseph J. DiMona, *The Role of Emissions Allowance Trading in the Reduction of Greenhouse Gases: The U.S. Experience*, Working Papers on Technology and Global Change, CIEL-U.S. at 7 (citing S. 1323, 101st Cong., 1st Sess.; 137 CONG. REC. S 8136 (daily ed. June 19, 1991)). The bill calls for a limited allowance trading scheme for major carbon dioxide emitters, which includes sources emitting in excess of 100,000 tons of carbon dioxide per year and power plants which have been operating for 65 years. *Id.* Although the bill does not cap emissions, it seeks to establish a National Carbon Dioxide Offset Bank that would monitor whether the sources abide by their allowable level of emissions. *Id.* The EPA would be required to give emitters offset credits for activities such as lowering automobile emissions below current legal levels, planting trees, and increasing energy conservation. *Id.* Further, the bill provides for monetary penalties in the event the emitting sources exceed their allowable levels. *Id.*

In addition, 36 Democrats and 5 Republicans sponsored a resolution (S. Res. 53) calling on the United States to set a date for adopting greenhouse gas reduction policies. *Report Says United States Could Cut CO₂ Emissions up to 35 Percent by 2015*, 14 Int'l Env't. Rep. (BNA) No. 3, at 71 (Feb. 13, 1991).

¹⁵⁸ Ogden, *supra* note 15, at 1000. Admittedly, the United States' primary concern in the Montreal Protocol was to guard against increased incidents of skin cancer which are caused by exposure to excessive radiation.

Justice, in the *Nuclear Test* cases, did not reach the issue of whether a country violates customary international legal principles by injuring another nation's property or health interests through environmental pollution. However, because previously the *Trail Smelter*, *Corfu Channel*, and *Lake Lanoux* cases had set forth a customary principle that a nation may not use its property in a way that would injure another nation's interests, France may have reasoned that the same principle would apply to environmental pollution and that it would be liable if it did not halt its activities.

Even if a world court will enforce the customary international legal principle that a nation may not use its property in a way that would injure another nation's environmental interests, global warming litigation under customary law will inherently fail for several reasons.¹⁵⁹ First, the polluting state may refuse to submit to the world court's jurisdiction.¹⁶⁰ Also, because every nation that emits carbon dioxide, CFCs, or methane contributes jointly to global warming,¹⁶¹ the damaged state will have a difficult time pinpointing and proving a causal connection between the defendant state's emissions and its injury.¹⁶² Furthermore, if a world court declared a monetary or injunctive judgment, there is no guarantee that it will be enforced.¹⁶³

Although customary law will not suffice in global warming litigation, the *Nuclear Test* cases indicate that if United States' officials specifically announce that our nation intends to reduce its carbon dioxide emissions, the International Court of Justice could find that the United States unilaterally bound itself to reduce its carbon dioxide emissions. Nevertheless, it is unlikely that the United States will make such statements unless it intends to join a treaty. Thus, perhaps other nations can argue that because the United States has repeatedly pronounced its concern for the environment and its desire to take appropriate measures to preserve the environment, it has unilaterally bound itself to a commitment for the reduction of harmful carbon emissions. Of course, in all likelihood, the ICJ will not hold the

¹⁵⁹ Poirier, *supra* note 20, at 6.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² Recall that the signatories of the Convention on Long-Range Transboundary Air Pollution agreed that "it is not generally possible to distinguish the contribution of individual emission sources or groups of sources." See *supra* text accompanying note 53.

¹⁶³ Poirier, *supra* note 20, at 7.

United States to its general statements of concern about the environment.

In contrast to customary law principles and unilaterally binding statements, an international treaty could effectively reduce the threat of global warming. A treaty has the advantages of giving notice to the participating nations of their individual obligations and of allowing treaty makers to adopt a preventative approach.¹⁶⁴ Using the historical international air pollution agreements as adaptive models, the United States must cooperate with other nations and help create a global warming treaty which firmly establishes a reduction schedule for greenhouse gases.

Principle 21 of the Stockholm Declaration, that each nation has the responsibility to avoid damaging another nation's environment,¹⁶⁵ should be either expressly stated or alluded to in the global warming treaty. In the treaty's provisions, reference to Principle 21 should explain that all countries need to limit their carbon dioxide emissions, methane releases, and deforestation so that global warming will not devastate other coastal and agricultural nations.

The drafters of the global warming treaty need to examine the text of the Convention for Long-Range Transboundary Air Pollution and of the Vienna Convention for the Protection of the Ozone Layer. The loose language of these two agreements must be avoided in the proposed treaty. Loose language commonly results in no commitments from a country unless it is convenient. Global warming is imminent, and it is urgent that the drafters create a treaty that will effectively *bind* signatory nations to actively avoid further warming.

Some scholars predict that if a firm greenhouse gas reduction schedule is not settled at the UNCED, a global warming treaty will resemble the framework treaty of the Vienna Convention.¹⁶⁶ Thus, the 1992 treaty may only call for further research and negotiations. Because an action-oriented global warming treaty is necessary, the drafters should utilize the Montreal Protocol on Substances That Deplete the Ozone Layer as a stepping stone to a more forceful agreement.¹⁶⁷ First, patterned after the Montreal Protocol's CFC re-

¹⁶⁴ *Id.* at 8.

¹⁶⁵ See *supra* text accompanying note 50.

¹⁶⁶ *E.g.*, Schoenbaum Interview, *supra* note 132. Because of the United States' resistance to carbon dioxide reductions, at best a framework treaty will be signed at the UNCED in Brazil. *Id.*

¹⁶⁷ Susan E. Holley, Note, *Global Warming: Construction and Enforcement of*

duction schedule, the 1992 treaty must set a steadfast, specific reduction schedule for carbon dioxide emissions (or at least definite goals for establishing increased reduction in the immediate future). A global warming treaty should also resemble the Montreal Protocol in that a flexible approach given to individual nations will allow each country to choose its own method of reduction.¹⁶⁸ Thus, each nation will retain its feeling of sovereignty by tailoring its reduction approach to best fit its economic, social, and political situation.

In addition, a global warming treaty must emulate the Montreal Protocol by providing assistance to developing countries. A monetary fund solicited from the industrialized countries should finance technology transfers to less developed countries. Less developed countries,

an International Accord, 10 STAN. ENV'T'L L.J. 44, 68 (1991). However, because global warming is a more complex issue than ozone depletion, the Montreal Protocol cannot set a direct precedent. *Id.*

¹⁶⁸ Susan Holley asserts that an international, non-governmental United Nations body should set world prices of fossil fuels to reflect the global warming potential of their emissions; the higher the global warming potential, the higher the cost of the fuel. *Id.* Moreover, she stresses the need for the international body to implement fossil fuel taxes, which should also be based on each fuel's global warming potential, and she asserts that the taxes should be heavier on richer countries. *Id.* In addition, she emphasizes the need to place an activity tax, rather than a purchase tax, on methane. *Id.* That is, because methane emissions are often a by-product of other activities, the emissions are not easily traced, and therefore partaking in the activity which produces the by-product should be taxed. *Id.* Ms. Holley believes that fixing prices and imposing taxes from an international level will provide incentives to industries to reduce their harmful emissions. *Id.* at 83.

However, international price fixing and world-wide taxes are not the solution. An international agency that would undertake these tasks would effectively be attempting to regulate the world economy, which would be impossible. First, free market countries would oppose the agency's fixed fossil fuel prices because fixed prices would interfere with their economies' dynamic supply and demand curves. Secondly, an attempt to heavily tax industrialized countries would be vigorously opposed by those nations. In fact, any attempt to impose a requirement on a sovereign nation will be met with resistance. While Ms. Holley's ideas are respectable, carbon taxes and price fixing should be done at a national level. As with the Montreal Protocol, individual signatory countries should be allowed to implement carbon dioxide reductions with methods of their own choosing. Thus, each nation will retain its proper feeling of sovereignty.

Of course, it may be said that global warming is a problem which requires the breaking down of national boundaries to reach a global solution. *Id.* However, nationalistic attitudes are strongly fostered by most nations, and realistically the 1992 treaty cannot hope to bypass national governments with an international agency. Instead, a global warming treaty should establish an international agency that suggests, rather than imposes, economic solutions. This kind of "hands-off" international agency will more likely be accepted by sovereign nations and will allow those nations to decide for themselves what strategies are best.

as with many industrialized nations, need to learn how to utilize fossil fuels efficiently and how to produce clean energy sources. In addition, it is imperative that the fund give economic incentives to the LDCs to promote forestry for the replenishment of carbon sinks.¹⁶⁹ Presently, deforestation occurs because economic incentives exist that encourage the clearing of land for ranching, farming, and the export of hardwoods.¹⁷⁰

Furthermore, similar to the Montreal Protocol's transferable CFC production rights, an international treaty with full global participation needs a cap on the total amount of global carbon dioxide emissions allowable.¹⁷¹ The total amount of emissions allowable¹⁷² could be parceled into carbon dioxide and methane entitlement rights. These entitlement rights to emit greenhouse gases would then be divided among all nations.¹⁷³ The individual nations may then bargain for and exchange their emission rights.¹⁷⁴ Also, industries within a nation

¹⁶⁹ FLAVIN, *supra* note 19, at 30.

¹⁷⁰ *Id.*; Holley, *supra* note 167, at 86.

¹⁷¹ However, perhaps the cap needs to revolve around a consumption criterion. Holley, *supra* note 167, at 84 n.167. That is, rather than specifying the total global emissions allowable, the cap should state the allowable maximum amount of activities that produce greenhouse gases. A consumption criterion may be preferable because monitoring of emissions is difficult due to limitations in technology. *Id.*

¹⁷² A United Nations body, representative of every nation, should add the emission levels that each industrialized country has agreed to reach to the emission levels that each less developed country has agreed not to exceed. Similar to the purpose behind the provision of the Montreal Protocol where LDCs were allowed to continue to increase CFC production and consumption for 10 years, in the 1992 treaty each less developed country should not be expected to reduce carbon dioxide and methane emissions at the expense of never catching up with industrialized countries' economic growth. Therefore, LDCs need a forgiveness clause to allow them to emit greenhouse gases until their economic growth begins to be driven by cleaner energy sources.

¹⁷³ The calculation used to parcel the rights among nations will be strongly contested. LDCs probably will argue for a percentage of emissions rights based on per capita, while the industrialized countries will argue for a percentage based on past GNP. Donald M. Goldberg, *Devising a Global Warming Strategy*, in WORKING PAPERS ON TECHNOLOGY AND GLOBAL CHANGE, CIEL-U.S. at 6, 7. A compromise must be achieved before nations can obtain their rights to pollute.

In addition, several provisions should be drafted to handle future allotment of emission rights to new treaty members. New member states may develop for several reasons, including changes of existing national boundaries or creation of new sovereign nations from existing member states, or simply a nation who had been protesting the treaty may later choose to join.

¹⁷⁴ Susan Holley suggests that an international market of emissions permit trading will cause inequities in the long run by reinforcing the existing relationships of industrialized countries' economic dominance over developing countries. Holley, *supra* note 167, at 84. However, in a free global market, less developed countries

may bargain for emission rights. Over time, the level of the total allowable global emissions cap will be reduced.

In contrast with the Montreal Protocol, the drafters of a 1992 global warming treaty should carefully adopt a rigorous compliance mechanism to ensure that the treaty does not become a "paper tiger."¹⁷⁵ A United Nations agency must be formed to handle the monitoring and compliance procedures stipulated in the 1992 treaty.¹⁷⁶ Because effective monitoring by a single agency would be nearly impossible, individual nations need to be responsible for monitoring each other in order to supplement random United Nations' inspections of emissions records.¹⁷⁷

Under a strict liability standard,¹⁷⁸ if an individual nation fails to comply with its reduction schedule, the United Nations agency should impose a monetary fine upon that nation,¹⁷⁹ adjusting the penalty to

have a choice. If they sell their carbon dioxide emissions rights to an industrialized country, then rather than merely falling behind in economic growth, the LDCs will receive a monetary or developmental benefit in exchange for the right. The money received, along with money from the international fund, may be invested into cleaner, reusable fuel production. These LDCs can thereby experience economic growth driven by cleaner energy sources. In fact, after a technology transfer, by selling their carbon emission rights and investing the profits into clean fuel energy facilities, the LDCs may actually gain the advantage of being market forerunners in clean energy production. Thus, LDCs will be able to work out the problems of changing to new energy sources early and sell both green-conscious products and their expertise in converting to cleaner energy sources on the world market. Meanwhile, industrialized countries who purchase the LDCs' permits will continue to revolve around fossil fuel economies and avoid the inevitable switch to cleaner fuel sources. By the time the industrialized countries convert to renewable energy sources, the LDCs will be a step ahead. See *Bush, Industry Cool to Calls for Tough Global Warming Controls*, U.S.A. TODAY, Feb. 18, 1992, at 8B, col. 4 (if the United States does not take the lead in producing energy efficient technologies, it will be forced to import assistance for solving environmental problems).

¹⁷⁵ See *supra* note 29.

¹⁷⁶ Holley, *supra* note 167, at 87.

¹⁷⁷ *Id.* at 89.

¹⁷⁸ Because the threat of global warming is imminent and the consequences are so drastic, strict liability is necessary to create an adequate enforcement mechanism in a global warming treaty. *Id.* at 94. However, states could be allowed a defense if they could demonstrate that a specific company within its boundary intentionally exceeded its permitted emissions. In this case, the particular company could be forced to pay the penalty and could be subject to criminal prosecutions. *Id.* at 93.

¹⁷⁹ Holley suggests that for the purpose of a monitoring and compliance mechanism, national sovereignty must be transcended by establishing International Environmental Territories, where each territory would encompass several nations. *Id.* at 88. She emphasizes that global security against global warming "must replace notions of individually defined national security." She argues that International Environmental

reflect the country's economic power or Gross National Product.¹⁸⁰ If the nation refused to pay, political pressure could be imposed by other signatories. If the breaching nation continued to ignore its penalty, a trade embargo by the rest of the world could be initiated by the United Nations.

IV. CONCLUSION

By ratifying the Vienna Convention and Montreal Protocol, the United States committed itself to the prevention of ozone depletion and implicitly recognized the threat of climate change. Faced with a new international environmental treaty in 1992, in order to remain consistent with its belief that the global environment needs protection, the United States must agree to a carbon dioxide reduction schedule. Although a carbon dioxide reduction commitment would be costly in the short-run, the United States should tighten its purse strings to avoid a more expensive problem in the future and should not retreat to a "no regrets" adaptive approach.

The United States must follow the lead of West Germany by implementing a carbon dioxide reduction schedule, and of the European Economic Community by beginning the debate on fossil fuel taxes. Also, the federal government should establish a national policy promoting reduction of greenhouse gases which emulates existing state action. For instance, Oregon has passed a law to require a twenty

Territories will create cooperation among nations, whereas the present international system "maintain[s] the status quo." She points to the creation of the European Economic Community as evidence that an international government can work. In addition, she asserts that Article 130R of the Single European Act, which allocates jurisdictional authority of environmental issues to a community level agency, should serve as an example for an international body to combat global warming. *Id.*

Although an international mechanism should handle the monitoring and compliance issues of a global warming treaty, structuring International Environmental Territories is unnecessary. Territories which include more than one country would complicate compliance proceedings. For example, if a territory is identified as exceeding emissions and a fine is imposed by the international body, even if only one of the countries actually violated the treaty all of the countries in the territory would be liable. In addition to creating problems of enforcement, this could foster much animosity between the territory's nations. Also, whoever attempts to determine the territorial boundaries will encounter several problems. For example, for political reasons, some countries will not want to join a territory with certain other nations, unlike the inherent political unity of the European Community which is based on common history and economic goals. The administrative hassles of establishing International Environmental Territories are not cost justified, because an international agency could regulate individual nations' emissions as easily as a territory's emissions.

¹⁸⁰ *Id.* at 91.

percent reduction of greenhouse gases by 2005, and California has demanded that automobile manufacturers provide consumers with a choice for a zero emission automobile.¹⁸¹ The private sector will adjust to a national policy for carbon dioxide reduction. Although prices may rise in the short run, paying for the prevention of global warming now will be cheaper than facing irreversible environmental degradation or absorbing cleanup costs later.

In the event that the United States refuses to sign a firm reduction schedule for carbon dioxide and other greenhouse gases at the 1992 United Nations Conference on the Environment and Development, either one of two things may happen. Most likely, a framework treaty will be signed in which nations agree to negotiate for a stronger accord and to share research in the meantime. While a framework treaty is a small step in the right direction, it is not enough because our planet's temperature will probably continue to rise as carbon dioxide emissions continue unabated. Alternatively, the many countries that support an action-oriented treaty may go forward without the United States and forge an international accord.¹⁸² If other countries create an agreement without the United States' assistance, the United States will lose its legal drafting role and will be unable to negotiate for favorable reduction terms. In the future, these countries will attempt to persuade the United States to become a treaty member. A trade embargo to coerce the United States into confronting the global environmental issue could occur. Since the United States could be pressured into adherence with a treaty in the future, entering the negotiation process now, at an early stage, would be more advantageous because the United States could influence the structure of a global emissions treaty.

Whether or not the United States participates in the creation of a 1992 treaty, the drafters of an international agreement on climate change should look to the Montreal Protocol on Substances That Deplete the Ozone Layer and other international agreements on air pollution for guidance. To appease nationalistic attitudes and promote implementation of emissions reductions, the 1992 treaty needs to

¹⁸¹ See *supra* note 155 and accompanying text.

¹⁸² Austria's Environment Minister Ruth Feldgrill-Zankel stated that her country would strongly urge the United States to end its opposition to a carbon dioxide reduction proposal. *Austria: Concern Over Lack of Commitment for Earth Summit*, Inter Press Serv., Mar. 12, 1992, available in LEXIS, Nexis Library, Omni File. She added that in a worst case scenario, Austria would not hesitate to join with other European nations to isolate the United States. *Id.*

allow individual countries the freedom to implement their own methods of carbon dioxide emissions reduction. Also, the treaty should provide for monetary and technological assistance to developing nations in order to give them financial incentives to halt deforestation and to allow them to utilize non-fossil fuels to produce economic growth. Importantly, because creation of a vague, loose treaty may hasten the arrival of a global warming disaster, the treaty drafters should activate an effective mechanism to monitor each nations' compliance and implement strict penalties in the event of a treaty violation. Without the ability to force nations to comply with a 1992 international treaty, a significant reduction of greenhouse emissions will probably fail.

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