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## Litigating Global Warming: Sstantive Law in Search of a Forum

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## ARTICLES

### LITIGATING GLOBAL WARMING: SUBSTANTIVE LAW IN SEARCH OF A FORUM

*Henry W. McGee, Jr.\**

There can no longer be genuine doubt that human-made gases are the dominant cause of observed warming. This energy imbalance is the smoking gun we have been looking for.

James Hansen, NASA Climatologist<sup>1</sup>

In response to the obstruction by the United States of the Kyoto protocols and its subsequent agreements, American environmental

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1. James Hansen, NASA climatologist, speaking about a NASA-led team of scientists who reported in the journal *Science* that their findings should dispel doubts about forecasts of climate change. The researchers measured Earth's energy imbalance because of more precise ocean readings collected by 1,800 technology-packed floats deployed in seas worldwide in 2000, in a monitoring effort known as Argo. Their measurements were supplemented by satellite gauging of ocean levels, which rise both from melt water and as the sea warms and expands. Scientists were able to calculate the ocean's heat content and the global energy imbalance, finding that for every square meter of surface area, the planet absorbs almost one watt more of the energy from the sun than it radiates back into space as heat — a historically significant imbalance that will arm the atmosphere steadily. Ominously, the researchers warned that things could “spin out of our control, especially as ocean levels rise from melting Greenland and Antarctic ice sheets.” Charles J. Hanley, *New Evidence of Global Warming Climate Study Earth Absorbs More Heat Than It Gives Off*, THE SEATTLE TIMES, Apr. 29, 2005, at A7, col. 1.

NGOs and state governments have filed a range of lawsuits to force the current U.S. administration, automobile manufacturers, and regulatory actors to combat global warming. This essay first very briefly sketches some of the strategies by litigants to force compliance with Kyoto, an agreement which reflects nearly all of the international community's desire to schedule reductions in greenhouse gas emissions. The essay then describes a strategy that perhaps is the most conventional in terms of international law, but requires a nation which is either desperate enough, or else sufficiently free of U.S. influences to challenge its policy lapses in international tribunals.<sup>2</sup>

## I. PENDING AND INCIPIENT LITIGATION

### A. Common Law Private/Public Nuisance Litigation

In *State of Connecticut v. American Electric Power Co., Inc.*,<sup>3</sup> the plaintiffs rely upon federal common law nuisance claims and assert that the power companies emit 650 million tons of carbon dioxide every year. In its Memorandum in Opposition to Defendant's Motion to Dismiss, the plaintiffs argue "the continued vitality of federal specialized common law where necessary to protect uniquely federal interests."<sup>4</sup> Standing is predicated on the states' *parens patriae* based on actual and threatened damages to their citizens.

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2. The tortured history of the negotiations (and the obstructive role of the United States) is described by Donald M. Goldberg, *As the World Burns: Negotiating the Framework Convention on Climate Change*, 5 GEO. INT'L. ENVTL. L. REV. 239, 244-51 (1993). See also Jeffrey Kluger, *A Climate of Despair*, TIME, Apr. 9, 2001, at 30. A tentatively constructive approach by industry in the United States is described by Mark Landler, *Mixed Feelings as Kyoto Pact Takes Effect*, N.Y. TIMES, Feb. 16, 2005, at C1, col. 1.

3. *State of Connecticut et al. v. American Electric Power Co. Inc. et al.*, No. 04 Civ. 5669, 2005 U.S. Dist. LEXIS 19964 (S.D.N.Y. Sep. 15, 2005).

4. Plaintiff's Memorandum of Law at 11, *State of Connecticut et al. v. American Electric Power Co. Inc. et al.*, *supra* note 3. See also *Illinois v. City of Milwaukee*, 406 U.S. 91, 99 (1972), *Sosa v. Alvarez-Machain*, 542 U.S. 692, 728 (2004). In response to "the



The complaint invokes federal common law because the dispute involves ambient interstate air pollution unaddressed by Congress. The complaint alleges that, "Defendants, by their annual emission of approximately 650 million tons of carbon dioxide, are substantial contributors to elevated levels of carbon dioxide and global warming."<sup>5</sup> The defendants are charged with generating twenty-five percent of the power sector's emissions, or ten percent of all anthropogenic emissions nationally.

Injuries already suffered by the plaintiffs include declining water supplies through loss of snow pack, intensification of summer heat waves and consequent public health impacts, loss of coastal resources through sea level rises due to thermal expansion of sea water as well as continual melting of glaciers and ice sheets, increased evaporation of the Great Lakes, reduction of livestock and crop yields, impacts to the biota and the reduction of trout and other endangered/extinct species, wildfire damage, and the risk of sudden and catastrophic climate change.<sup>6</sup>

*B. Petition to EPA for Clean Air Act (CAA) Regulation of Motor Vehicle Toxic Emissions*

EPA's refusal to regulate motor vehicle CO<sub>2</sub> emissions was challenged in *Massachusetts v. EPA*.<sup>7</sup> The action appealed EPA

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canard that *Erie Railroad v. Tompkins*, 304 U.S. 64 (1938) swept away federal common law," the Plaintiffs argue that "Erie disavowed the existence of a 'federal *general* common law' beginning [the day *Erie* was decided] in *Hinderlider v. LaPlata River Co.*, 304 U.S. 92, 110 (1938). Most recently in 2004, the Court repeatedly recognized the continued vitality of federal *specialized* common law where necessary to protect uniquely federal interests." Plaintiff's Memorandum of Law at 11. See also Kathryn Plunkett, *The Common Law of Nuisance in New York Environmental Litigation*, 16-1 ENVIRONMENTAL LAW IN NEW YORK 1 (2005).

5. Complaint at ¶1, *State of Connecticut et al. v. American Electric Power Co. Inc. et al.*, *supra* note 3.

6. *Id.* At ¶¶ 28-42.

7. The action appeals EPA denial of a Petition to regulate CO<sub>2</sub> via mandamus complaint for declaratory and injunctive relief. The action was filed October 23, 2003 in the U.S. Court of Appeals (D.C.

denial of a Petition to regulate CO<sub>2</sub> via mandamus complaint for declaratory and injunctive relief. The action was filed October 23, 2003 in the U.S. Court of Appeals D.C. Circuit and eventually dismissed.<sup>8</sup>

Alaska, Idaho, Kansas, Nebraska, North Dakota, Michigan, Ohio, South Dakota as well as the Alliance of Automobile Manufacturers, National Automobile Dealers Association, Engine Manufacturers Association, Truck Manufacturers Association, CO<sub>2</sub> Litigation Group, and Utility Air Regulatory Group intervened in support of the EPA.

Jurisdiction was founded on the Administrative Procedure Act (APA) Section 307(b)(1);<sup>9</sup> the denial of the petition to regulate motor vehicle emissions was cited as a final agency action, and standing is predicated on injuries resulting from “the effects of climate change caused by greenhouse gas emissions....” Demonstrated harms “include loss of state-owned property to rising sea-levels, including, *inter alia*, permanent losses due to inundation and periodic losses due to storm surge flooding, increased health care related costs, reduced water supply due to reduced snow pack, increases saltwater intrusion, and damage to state-owned property due to wildfires, *etc.*”<sup>10</sup>

The Court of Appeals litigation was commenced when an appeal was taken from EPA’s decision that it lacked authority to regulate CO<sub>2</sub> and three other greenhouse gas emissions from motor vehicle tailpipes under the Clean Air Act (CAA) Section 202(a)(1). The Clean Air Act authorizes the EPA to regulate “any air pollutant” that may endanger public health or welfare, including, specifically, through effects on “climate.” EPA’s primary response was that the Clean Air Act does not speak to the authority of EPA to address the impacts of greenhouse gases. The EPA also responded that it had “withdrawn ” its earlier opinion declaring it had authority to regulate

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Cir. 031362-1368) and the petitions were eventually dismissed reversed. *See* *Mass. v. EPA*, 415 F.3d 50 (D.C. Cir. 2005).

8. *Mass. v. EPA*, 415 F.3d at 58-59 (D.C. Cir. 2005)(plurality opinion)..

9. 42 U.S.C. § 7607(b)(1) (2005).

10. *Massachusetts v. EPA*, Brief for Petitioners, October 23, 2003, at 2-4.



greenhouse gases,<sup>11</sup> that regulating such gases would conflict with federal regulation of fuel economy under the Energy Policy and Conversation Act, and any such regulation would be inappropriate because of George Bush's "comprehensive" climate change policies as well as uncertainty as to climate change science.<sup>12</sup> The

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11. In an April 10, 1998 response to a request for a legal opinion by Congressman Tom Delay, Clinton-era EPA General Counsel, concluded that CO<sub>2</sub> is indisputably an "air pollutant" within the meaning of the statute. The opinion was in the form of a Memorandum from Jonathan Z. Cannon, EPA General Counsel, to Carol M. Browner, EPA Administrator, and entitled "EPA's authority to Regulate Pollutants emitted by Electric Power Generation Sources." Cannon's judgment that carbon dioxide is an "air pollutant" was predicated on section 103 (g) of the Clean Air Act, which authorizes EPA to develop and demonstrate nonregulatory strategies and technologies for air pollution prevention. 42 U.S.C. § 7403(g)(2005). Section 103 (g) states that the program elements include "[i]mprovements in nonregulatory strategies and technologies for preventing or reducing multiple air pollutants, including sulfur oxides, nitrogen oxides, heavy metals, particulate matter, carbon monoxide, and carbon dioxide from stationary sources including fossil fuel power plants." 42 U.S.C. § 7403(g)(1)(2005). Cannon wrote that, "A substance can be an air pollutant even though it is naturally present in air in some quantities. . . . Some substances regulated under the Act as hazardous air pollutants are actually necessary in trace quantities for human life, but are toxic at higher levels or through other routes of exposure." Cannon's successor, EPA General Counsel Gary S. Guzy, defended the Agency's conclusion that carbon dioxide and other climate changing emissions are indeed "air pollutants" within the meaning of the Clean Air Act. *See* Guzy's testimony before the Subcommittee on National Economic Growth, Natural Resources and Regulatory Affairs of the Committee on Government Reform, and the House Subcommittee on Energy and the Environment of the House Committee on Science, U.S., House of Representatives, October 6, 1999.

12. EPA General Counsel Robert Fabricant's opinion was issued on August 28, 2003 and formally withdrew the 1998 Cannon memo, concluding that "the CAA does not regulate for global climate change." In addition to the alleged lack of statutory authority, the

withdrawal of the prior regulation was consistent with the Administration's pattern and practice of changing direction in environmental policy.<sup>13</sup>

*C. Litigation on Federal Agencies Failure to Conduct NEPA  
EA/EIS Study*

Another front in the litigation war on global warming is premised on the requirement by the National Environmental Protection Act (NEPA) for a study of environmental impacts on every major federal action "significantly affecting" the quality of the human

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Fabricant opinion also argued that regulation of one of the four greenhouse gases (carbon dioxide) emitted from light duty vehicles would conflict with the federal regulation of fuel economy under the Energy Policy and Conservation Act, and that, in any case, the regulation is "not appropriate "in light of the President's "comprehensive' climate change policies, and uncertainties in science." See Memorandum from EPA General Counsel Robert E. Fabricant to Acting EPA Administrator Marianne L. Horinko, entitled "EPA's Authority to Impose Mandatory Controls to Address Global Climate Change Under the Clean Air Act," August 28, 2003.

13. See Bruce Barcott, *Changing the Rules: How the Bush administration quietly—and radically—transformed the nation's clean-air policy*, NEW YORK TIMES MAGAZINE, Apr. 4, 2004, at 39. See also Alex Fryer, *Bush's Gatekeeper Weighs Costs, Benefits of New Regulations*, THE SEATTLE TIMES, Sept. 29, 2004, at A1; Felicity Barringer, *Bush's Record: New Priorities in Environment*, NEW YORK TIMES, Sep. 14, 2001, at A1, col. 1. Ms. Barringer lists nine distinct areas in which the Administration has changed prior environmental policy. One of the areas is wetlands, explored in Tim Reiterman, *Has Bush Delivered On Pledge To Expand Nation's Wetlands?*, THE SEATTLE TIMES, Apr. 29, 2005, at A3, col. 1. The article relates that in 2004, "Bush invited leaders of several hunting and fishing groups to his ranch to reassure them of his concern for wetlands. Before the election, he vowed: "Instead of just limiting our losses, we will expand our wetlands." But interviews and government reports show that, although the administration has offered farmers financial incentives, the primary tools for wetland preservation have been weakened."



environment.”<sup>14</sup> In *Friends of the Earth Inc. v. Watson*,<sup>15</sup> the Plaintiff asserts that an Environmental Assessment and subsequent Environmental Impact Statements should have been prepared before the government funded overseas energy and power projects, “resulting in the annual emission of billions of tons of greenhouse gases (primarily CO<sub>2</sub>).” The Complaint asserts that OPIC and Ex-Im “illegally” provided insurance, loans and loan guarantees for overseas projects, or to U.S. companies investing in such projects. Specific injuries consisted of massive die-offs of spruce trees in Alaska, a shift of maple sap-bearing trees northward from Vermont into Canada with a subsequent loss of tree farm value in the United States, and the death of coral reefs off the Florida Keys, diminishing the opportunities for research by a South Carolina biologist.<sup>16</sup> The case was filed on August 27, 2005, and set for hearing on April 29, 2005 before Judge Jeffrey S. White on cross-motions for summary judgment, which will contest issues of standing to sue, ripeness, and exhaustion of remedies.

Jurisdiction is based on Article III and the Administrative Procedure Act claiming organizational standing to vindicate the denial of procedural rights under NEPA.<sup>17</sup> The agency response, based primarily on *Utah Wilderness Alliance v. Norton*,<sup>18</sup> is that there is no jurisdiction because there is no final agency action, no injury in fact to the plaintiffs, and that the projects causing the alleged injuries would proceed without any action by the defendants.

#### D. Human Rights Petition to OAS Inter-American Commission

A nearly perfect mesh of jurisdiction and substantive harm clearly violating human rights has enabled Earthjustice to prepare a petition

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14. 42 U.S.C. §4332 (2)(C) (1969).

15. *Friends of the Earth v. Watson*, No. 02-4106, 2005 U.S. Dist. WL 2035596, at 3\* (N.D. Cal. Aug. 23, 2005) (citing, *inter alia*, *Bennett v. Spear*, 520 U.S. 152, 162 (1997)).

16. *Id.*

17. *See id.*

18. 348 F. Supp. 2d 1265 (D. Utah 2004) (holding that in the conduct of the regulation of off-road vehicles, the Department of the Interior properly exercised its discretion not to regulate off-road vehicles).



against the United States on behalf of indigenous peoples known as the Inuits. Their environment is deteriorating in a dramatic and plainly visible manner because of global warming.<sup>19</sup> The arctic is the aboriginal homeland of several native groups, including the Inuits, who reside along coastlines and river valleys. Thawing permafrost in the Arctic has triggered sudden and dramatic landscape erosion and upheaval causing the necessity to relocate houses in Alaska.<sup>20</sup> Another 600 homes may be removed due to rising seawater in coming decades.<sup>21</sup> Indeed, substantial patterns of

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19. The Inuit strategy was announced at the Tenth Session of the Conference of Parties (COP) to the U.N. Framework Convention on Climate Change. See *Tenth Session of the Conference of Parties*, [http://unfccc.int/meetings/cop\\_10/items/2944.php](http://unfccc.int/meetings/cop_10/items/2944.php) (last visited November 27, 2005). The theoretical foundations of the action are discussed by Donald M. Goldberg of The Center for Environmental Law, and Martin Wagner, Director of International Programs for Earthjustice, in their article, *Petitioning for Adverse Impacts of Global Warming in the Inter-American Human Rights System*, in *CLIMATE CHANGE-FIVE YEARS AFTER KYOTO*, 191 (Velma I Glover ed., 2004); See also PETER GLEIK, *THE WORLD'S WATER 2002-2003: THE BIENNIAL REPORT ON FRESHWATER RESOURCES* (Peter Gleick, ed., Island Press 2002).

20. The impacts in Alaska are vividly captured in a three-part series in *The New Yorker Magazine*. Elizabeth Kolbert, *The Climate of Man-I*, *THE NEW YORKER*, April 25, 2005, at 56.

21. See Juliet Eilperin & Rick Weiss, *Dramatic Warming Confirmed in Arctic*, *THE SEATTLE TIMES*, Oct. 31, 2004, at A1: "The most comprehensive international assessment of Arctic climate change has concluded that Earth's upper latitudes are experiencing unprecedented increases in temperature, glacial melting and weather-pattern changes, with most of those changes attributable to the human generation of greenhouse gases from automobiles, power plants and other sources. . . The findings, which reflect four years of study, confirm earlier evidence that the Arctic is warming far more quickly than Earth overall, with temperature increases in some northern regions exceeding by tenfold the average 1 degree Fahrenheit increase experienced on Earth in the past 100 years. The possibility of catastrophic change has been suggested more than five years ago." See also William K. Stevens, *Arctic Thawing May Jolt Sea's Climate Belt*, *N.Y. TIMES*, Dec. 7, 1999, at F3. A recent

forest disturbance including fire, and insect infestations at twice their normal rate has destroyed more than two million acres of trees, the largest in recorded history in North America.<sup>22</sup> “Unchecked, global warming threatens to destroy indigenous culture, render their land uninhabitable, and rob them of their means of subsistence.”<sup>23</sup>

Messrs. Goldberg and Wagner suggest the following logic for the lawsuit: although private persons cannot submit a case directly to the OAS Inter-American Court, and since the United States has not ratified the American Convention on Human Rights, a lawsuit against the United States is not likely to succeed. Because the United States participates in the OAS and the Inter-American system, however, the Commission could attempt to bring about negotiations between the United States and the arctic peoples. The Commission could also issue a report examining the link between global warming and human rights which

could have a powerful impact on worldwide efforts to address global warming... Recognition by the Commission of a link between global warming and human rights may establish a legal basis for holding responsible countries that have profited from inadequate greenhouse gas regulation and may establish a legal basis for holding responsible countries that have profited from inadequate greenhouse gas regulation...<sup>24</sup>

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motion picture portrayed the consequences of the halt of south to north ocean currents because of the influx of freshwater from melting icecaps in Greenland and the Antarctic. *THE DAY AFTER TOMORROW* (20<sup>th</sup> Century Fox 2003).

22. The author taught in Alaska in 2004 and saw the spectacular, almost unbelievable extent of dying spruce trees throughout the Anchorage, and the Kenai Peninsula. The impacts of global warming on Alaska are explored in the PBS Home Video, *Scientific American Frontiers: Hot Times in Alaska* (PBS Broadcast 2004). The problem continues, and the fires are a month early. See Rachel D’Oro, *Fire Season Heats up Early in Alaska*, *THE SEATTLE TIMES*, May 3, 2005, at B5.

23. Donald Goldberg & Martin Wagner, *Human Rights Litigation to Protect The Peoples of the Arctic*, 98 AM. SOC’Y INT’L L. PROC. 227 (2004).

24. See Goldberg and Wagner, *supra* note 19, at 203.



Because the U.S. is a member of the OAS, the Commission Rules of Procedure and custom apply the obligations of the Declaration of Human Rights enabling the Commission to hear claims alleging violations of the Charter. "Rights violated by the unregulated greenhouse gases in the United States include the right to life, the right to residence and movement, the right to inviolability of the home, the right to preservation of health and to well-being, the right to benefits of culture, and the right to work and to fair remuneration."<sup>25</sup> Finally, as indigenous peoples, the arctic first peoples are entitled to special protections. Various covenants of the United Nations and the Inter-American Commission have noted that "indigenous peoples have the right to a safe and healthy environment, which is an essential condition for the enjoyment of the right to life and collective well-being."<sup>26</sup>

## II. INTERNATIONAL ENVIRONMENTAL LAW LEGAL ACTION PARADIGMS

### A. *Transboundary Air Pollution and the Annihilation of Pacific Island States*

A terrifying irony of the transboundary spread of greenhouse gases is the fact that its initial and helpless victims are likely to be small island states of the Pacific, and/or in the Indian Ocean. Many of the vulnerable populations live in those areas devastated by the

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25. See Goldberg and Wagner, *supra* note 19, at 199. Omitted are the author's reference to specific provisions of the American Declaration of Human Rights. The authors discuss invoking the Inter-American Commission on Human Rights of the Organization of American States (OAS). Characteristically, the United States has not ratified either the American Convention on Human Rights, which subjects consenting member states to the jurisdiction of the Inter-American Court of Human Rights.

26. See Goldberg and Wagner, *supra* note 19, at fn. 66, (citing Proposed American Declaration of Indigenous Rights, Art. XIII.1 (approved by the Inter-American Commission on Human Rights February 26, 1977)).

December 2004 Tsunami generated by the Indonesian earthquake.<sup>27</sup> Pacific island developing countries generate 0.03 percent of the earth's carbon dioxide emissions, yet these nations "will be the first to suffer its horrifying consequences."<sup>28</sup> According to a 2005 report of the Japanese Ministry of the Environment, "[M]any of these countries are already experiencing disruptive changes consistent with the anticipated consequences of global climate change, including coastal erosion, droughts, coral bleaching, more widespread and frequent occurrence of mosquito-borne diseases and higher sea levels making soils too saline for cultivation of traditional crops. . . . [T]he most immediate and more significant impacts are likely to arise from changes in the nature of extreme events (e.g., flooding, tropical cyclones, storm surges), and climate variability (e.g., drought, prevailing winds accelerating coastal erosion)."<sup>29</sup>

"A high island such as Viti Levu could experience average annual economic losses of \$U.S. 23 to 52 million by 2050, equivalent to 2 to percent of Fiji's GDP. A low group of islands, such as Tarawa atoll, could face average annual damages of \$U.S. 8 to 16 million by

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27. The Tsunami nations were overwhelmingly Indian Ocean area populations, with Indonesia, India, Sri Lanka, and Thailand suffering the most casualties. The nations impacted, however, ranged from southeast Asia to East Africa, including also: Burma, Maldives, Malaysia, Tanzania, Bangladesh and Kenya. See TIME, January 10, 2005, at 22. An excellent map which simulates the waves triggered by the Indonesian earthquake is available from the United Nations Office for the Coordination of Humanitarian Affairs, December 27, 2004 and titled: "South Asia Earthquake and Tsunami, OCHA Situation Report No. 4, GLIDE: TS-2004-000147-LKA at [http://www.reliefweb.int/rw/fullMaps\\_Af.nsf/luFullMap/6979866094AC005EC1256F780033B4DD/\\$File/rw\\_quake\\_idn271204.pdf?OpenElement](http://www.reliefweb.int/rw/fullMaps_Af.nsf/luFullMap/6979866094AC005EC1256F780033B4DD/$File/rw_quake_idn271204.pdf?OpenElement) (last visited November 27, 2005).

28. See William C. G. Burns, *Pacific Island Developing Country Water Resources and Climate Change*, THE WORLD'S WATER 2002-2003 113, 113 (Peter H. Gleick ed., 2002).

29. JOHN E. HAY ET AL., CLIMATE VARIABILITY AND CHANGE AND SEA-LEVEL RISE IN THE PACIFIC ISLANDS: A RESOURCE BOOK FOR POLICY AND DECISION MAKERS, EDUCATORS AND OTHER STAKEHOLDERS 44 (Japan Ministry of the Environment 2005) [hereinafter Hay, *Climate Change*], at <http://www.sprep.org.ws/climate/doc/01index.htm> (last visited November 27, 2005).



2050, as compared to a current gross domestic produce (GDP) of \$US 47 million, or more in the case of catastrophic events such as cyclones, droughts or sea surges.”<sup>30</sup> Indeed, a worst-case scenario of climate change impacts, based on the IS92e scenario of the Intergovernmental Panel on Climate Change, suggests a temperature rise of 3.5 degrees Celsius by 2100 and a sea-level rise of 95 centimeters, above the present by 2100.<sup>31</sup> These impacts could render some of the island nations uninhabitable. Tuvalu, Kiribati, the Marshall Island and Tokelau would be the most severely impacted. Atolls such as Papua New Guinea and the low-lying islands of other states would also be inundated.

At the 1997 Kyoto conference, Tuvalu Prime Minister Koloa Talake declared that, “For the people of low-lying island states of the world . . . and certainly of my small country of Tuvalu in the Pacific, [global warming and its effects] are already threatening our very survival and existence.”<sup>32</sup> Tuvalu is a small and remote island, about half way between Hawaii and Australia, one of nine tiny atolls in the South Pacific that represent the Oceania island group.<sup>33</sup> Australia,

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30. *Id* at 45.

31. See Michael J. Edwards, *Security Implications of a Worst-case Scenario of Climate Change in the South-west Pacific*, 30 AUSTRALIAN GEOGRAPHER 311, 313 (1999).

32. Koloa Talake, Prime Minister, Tuvalu, Statement at the United Nations Framework Convention on Climate Change (December 8, 1997) (*available at* <http://www.tuvaluislands.com/kyoto-panieu.htm>).

33. “Tuvalu consists of a densely populated, scattered group of nine coral atolls with poor soil. The country has no known mineral resources and few exports. Subsistence farming and fishing are the primary economic activities. Fewer than 1,000 tourists, on average, visit Tuvalu annually. Government revenues largely come from the sale of stamps and coins and worker remittances. About 1,000 Tuvaluans work in Nauru in the phosphate mining industry. Nauru has begun repatriating Tuvaluans, however, as phosphate resources decline. Substantial income is received annually from an international trust fund established in 1987 by Australia, New Zealand, and the United Kingdom and supported also by Japan and South Korea. Thanks to wise investments and conservative withdrawals, this Fund has grown from an initial \$17 million to over \$35 million in 1999. The US government is also a major revenue

having failed to ratify the Kyoto Protocol along with the United States, has not only derided Tuvalu claims, but has also closed the door to immigration of its inhabitants in case of submergence of the island.

As if Tuvalu's impending disappearance is not horrible enough, the island is not alone. The Maldives in the Indian Ocean, also struck by the tsunami in 2004, is among a number of small island nations which are faced with inundation by as early as perhaps the end of this century. In January 2005, efforts to recognize the peril to the Maldives and other small island states received recognition at a UN Conference on Small Islands in Mauritius.

The meeting was attended by 18 presidents, vice-presidents, and prime ministers as well as journalists from 114 countries and representatives of 15 United Nations and other multilateral agencies.<sup>34</sup> The major document of the conference was the Mauritius Strategy for further implementation of the Barbados Programme of Action which emphasized that small island developing states "are located among the most vulnerable regions in the world in relation to the intensity and frequency of natural and environmental disasters and their increasing impact, and face

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source for Tuvalu, because of payments from a 1988 treaty on fisheries. In an effort to reduce its dependence on foreign aid, the government is pursuing public sector reforms, including privatization of some government functions and personnel cuts of up to 7%. In 1998, Tuvalu began deriving revenue from use of its area code for "900" lines and in 2000, from the lease of its "tv" Internet domain name. Royalties from these new technology sources could increase substantially over the next decade. With merchandise exports only a fraction of merchandise imports, continued reliance must be placed on fishing and telecommunications license fees, remittances from overseas workers, official transfers, and income from overseas investment." CENTRAL INTELLIGENCE AGENCY WORLD FACTBOOK, Tuvalu, at <http://www.cia.gov/cia/publications/factbook/geos/tv.html> (last visited November 27, 2005).

34. See Paul Brown, *Aid for Vulnerable Islands Declines: UN Conference Hears How Small States are Struggling with Rising Seas, Pollution and Cuts in Foreign Assistance*, GUARDIAN (UK), Jan. 10, 2005, at 14.



disproportionately high economic, social, and environmental consequence.”<sup>35</sup>

A research team of meteorological scientists gave this gloomy estimate of the situation in the Maldives:

There are calamitous reports about global warming and its possible effects on weather around the world. Global warming does not only mean long-term change in the weather. It may also cause increased swings in weather severity. For example, warmer oceans breed more and stronger cyclones, which could be real catastrophe for the people residing in the coastal regions. Small Islands are particularly vulnerable to changes in the environmental because of their restricted land area. Oceanic states composed of atolls, such as Kiribati in the Pacific and the Republic of Maldives in the Indian Ocean, face severe consequences as a result of sea level rise. They can be wiped of the globe literally if sea levels continue to rise at their current rates.<sup>36</sup>

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35. International Meeting to Review the Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, January 10-14, 2005, *Report*, ¶21, U.N. Doc A/CONF/.207/11. See also Global Conference on the Sustainable Development of Small Island Developing States, Apr. 25 – May 6, 1994, *Report of the Global Conference on Sustainable Developing States, Bridgetown, Barbados*, U.N. Doc A/CONF.167/9 (Oct. 1994), at <http://www.un.org/documents/ga/conf167/aconf167-9.htm> (last visited November 27, 2005). For an earlier article, see John Pernetta, *Impacts of Climate Change and Sea-Level Rise On Small Island States: National and International Responses*, GLOBAL ENVTL. CHANGE (1992), and William C. Burns, *Global Warming—The United Nations Framework Convention on Climate Change and the Future of Small Island States*, 6 DICK. J. ENVTL. L. & POL’Y 147 (1997).

36. Tariq Masood Ali Khan et al., *Relative Seal Level Changes in Maldives and Vulnerability of Land Due to Abnormal Coastal Inundation*, 25 MARINE GEODESY 133, 134 (2002). The authors describe the Maldives as “as an extremely low-lying island nation located on the equator from 7° N to 0.5° S in the Indian Ocean. The total land area of the Maldives Islands is only 300 km<sup>2</sup> with

In short, global climate change will slowly, but surely, open a Pandora's box of political, social, and economic instability with serious implications for the security of the south-west political region, a large swath of the earth that has hitherto been noted for its general political stability. As productive land and other resources disappear, increasingly dense populations caused by relocation, ethnic differences, as well as other differences, raise the specter of civil and international conflict on an aggravated and widespread scale.

*B. State Responsibility for Significant Transboundary Air Contamination*

From the Trail Smelter arbitration<sup>37</sup> to the 1992 Rio de Janeiro Convention on Bio Diversity (CBD),<sup>38</sup> treaties,<sup>39</sup> and

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maximum height about sea level about 3m. The predicted sea level trend can be a real threat to the country with its 644 km coastline. A 1 m rise in SLR could have disastrous effects on Maldives. The entire 1190 small islands making up the Republic of the Maldives barely rise 2 m above sea level and 80% of the land area is less than 1 m above sea level (Gayoom 1987). Male, capital of Maldives has 56,000 people living on an island 1.7 km long and 700 m wide. According to the Intergovernmental Panel for Climate Change (IPCC) under greenhouse gases emission scenarios, about 85% of Male would be inundated by the year 2100 (WMO 2000).” *Id.* at 135. See also Nils-Axel Mörner, *The Maldives Project: a future free from sea-level flooding*, 13 CONTEMP. S. ASIA, 149 (June 2004).

37. Trail Smelter Case (United States v. Canada), 3 UN Rep. Int; 1 Arb. Awards (1941). Sulfur-dioxide fumes from a British Columbia smelter damaged apple crops in the State of Washington. In 1930, for example, 300-350 tons of sulfur were emitted daily from the smokestacks of the smelter. The Arbitral Tribunal held, “that the Dominion of Canada is responsible in international law for the conduct of the Trail Smelter.”

38. Rio Declaration on Environment and Development, U.N. Doc. A/CONF.151/5/Rev.1 (1992), reprinted at 31 I.L.M. 874 (1992). Principle 2 says that “States have . . . the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that



customary international law<sup>40</sup> affirm that nations may not inflict significant environmental damage on neighboring states. While fault remains a controversial element of liability, the International Law Commission has drafted a jurisprudential basis for liability for lawful activities that cause environmental harm without fault or negligence.<sup>41</sup> In the case of the generation of greenhouse gases, the Framework Convention on Climate Change, subscribed to by even the United States,<sup>42</sup> and the subsequent Kyoto Protocol (rejected by the United States), establish a basis for liability under regimes of fault or no fault. Although State Responsibility has generally been thought to require attribution of private acts to the nation in which they occur, the official governmental position of the United States in

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activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.” Principle 7 affirms the duty of States to “conserve, protect and restore the health and integrity of the Earth’s ecosystem.” A number of other treaties and conventions also confirm the duty to not to inflict transboundary harm. For example, *Stockholm Declaration of the United Nations Conference on the Human Environment*, was adopted by the UN Conference on the Human Environment at Stockholm, June 16, 1972, Report of the UN Conference on the Human Environment, June 15-16, 1972, Principles 21 and 22, U.N. Doc. A/CONF.48/14/Rev.1 at 3 (1973).

39. Among the arbitrations are Summary of *Lac Lanoux Arbitration* (Spain v. France), 12 U.N.R.I .A.A. 281 (1957) and the *Corfu Channel Case* (United Kingdom v. Albania), 1949 I.C.J. 4.

40. See EDITORS OF THE HARV. L. REV., TRENDS IN INTERNATIONAL ENVIRONMENTAL LAW, 19 (1992) (noting that “Under the principle *sic utere tuo ut alienum non laedas*, a state has a duty to refrain from acts that would cause injury to persons or property located in the territory of another state. . . .A few subsequent decisions by international courts and tribunals have ratified the *sic utere* principle.”)

41. RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS LAW OF THE UNITED STATES §§ 601-604 (1987).

42. For the history of the Climate Change Convention see Donald Goldberg, *As the World Burns: Negotiating the Framework Convention on Climate Change*, 5 GEO. INT’L. ENVTL. L. REV. 239 (1993). See also Michael Lemonick, *Hot Air in Kyoto*, TIME, Dec. 8, 1997, at 79.

opposing the Kyoto protocol, and in refusing to take serious steps to combat global warming (indeed still resisting embracing the science which has established the phenomenon) have, in effect, endorsed and ratified the continued generation of greenhouse gases by domestic business entities in the United States, not to speak of the government itself.

Since Trail Smelter, treaties have tended to impose claims based on civil liability rather than on state responsibility because injured parties have more direct access to courts, and administrative actions and decisions as to whether to base claims on states require nations to take the initiative, something they are reluctant to do because of foreign relations concerns.<sup>43</sup> For example, none of the European nations contaminated by the Chernobyl disaster ever filed a claim against the Soviet Union.<sup>44</sup>

However, a number of treaties have created civil liability for transboundary harm. Among them are the United Nations convention on the Law of the Sea (UNCLOS) which requires states to "ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction."<sup>45</sup> Mr. Guruswamy and his colleagues have noted a number of other international agreements providing remedies for transboundary harms, including the Convention on the Non-navigational Uses of International Watercourses (paralleling the Organization of

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43. "[D]ecisions to prosecute claims based on [State Responsibility] are taken only in rare circumstances and victims are often held hostage to the politics of their own country." LAKSHMAN D. GURUSWAMY ET AL., *INTERNATIONAL ENVIRONMENTAL LAW AND WORLD ORDER*, 342 (2d ed. 1999).

44. See Deveraux McClatchey, *Chernobyl and Sandoz One Decade Later: The Evolution of State Responsibility for International Disasters, 1986-1996*, 25 GA. J. INT'L & COMP. L. 659 (1996).

45. See Guruswamy, *supra* note 43, at 342 (citing the United Nations Convention on the Law of the Sea, December 10, 1982. U.N. Doc. A/CONF62/122, *reprinted at* 21 I.L.M. 1261 (1982)). See also Lakshman Guruswamy, *The Promise of the United Nations Convention on the Law of the Sea (UNCLOS): Justice in Trade and Environment Disputes*, 25 *ECOLOGY L.Q.* 189 (1998).



Economic Development), which articulates the principle that domestic or national courts can and should grant environmental relief and compensation on the basis of non-discrimination.<sup>46</sup> Article 32 holds that where a person suffers or is under a serious threat of suffering significant transboundary harm, the state in which the harm originated should grant the injured person “in accordance with its legal system, access to judicial or other procedures, or a right to claim compensation or other relief . . .”<sup>47</sup>

Surely those nations which continue to emit substantial amounts of greenhouse gases may be subject to liability for the severe impacts inflicted by the climate change, which has now been established scientifically as caused by anthropogenic activity.

According to Guruswamy *et al.*, “the same principle is embodied in a cluster of other treaties dealing with a range of activities including the peaceful use of nuclear energy, the operation of nuclear ships; maritime carriage of nuclear materials; oil pollution; the carriage of dangerous goods by road, rail and inland navigation vessels; North American free trade, and protection of the Antarctic.”<sup>48</sup> Indeed, even a side agreement to NAFTA provides for international guarantees of mutual access to the courts of Canada, Mexico and the United States for violations of each nation’s environmental laws.<sup>49</sup> Finally, the European Court of Justice affirmed the assertion of jurisdiction by a Dutch court to remedy damage to nursery gardens

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46. See Guruswamy, *supra* note 43, at 347.

47. *Draft Articles on The Law of the Non-Navigational Uses of International Watercourses*, U.N. International Law Commission, U.N. Doc. A/46/10 (1991).

48. See Guruswamy, *supra* note 43, at 343 (citing the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy, the 1997 Vienna Convention on Civil Liability for Nuclear Damage, the 1992 International Convention on Civil Liability for Oil Pollution Damage, and the 1992 Convention on the Establishment of an International Fund for Oil Pollution Damage).

49. North American Agreement on Environmental Cooperation, the Environmental Side Agreement to North American Free Trade Agreement, U.S.-Can.-Mex., Jan. 1, 1994, 19 U.S.C.A. § 3472, 32 I.L.M. 289 (1993). *But cf.* Judith Wallace, *Corporate Nationality, Investment Protection Agreements, and Challenges to Domestic Natural Resources Law: The Implication of Glamis Gold’s NAFTA Chapter 11 Claim*, 17 GEO. INT’L. ENVTL. L. REV. 365 (2005).

in Holland because of the massive release of chlorides into the Rhine by a French company in Alsace.<sup>50</sup> Other treaties protect the Rhine against pollution, but claims have often been remitted to privatization to avoid accepting state responsibility.

Another important source for the principle of remedy for transboundary impacts may be found in codifications such as the Stockholm Declaration of the United Nations Conference on the Human Environment (June 16, 1972), the Rio Declaration on Environment and Development (June 14, 1992), Legal Principles for Environmental Protection and Sustainable Development, adopted by the Experts Group on Environmental Law of the World Commission on Environment and Development (June 1986), United States International Law Commission Draft Articles on State Responsibility (1989), International Law Commission Draft Articles on State Responsibility (1998), and United Nations International Law Commission, Draft Articles on International Liability for Injurious Consequences Arising out of Acts Not Prohibited by International Law.

As indicated earlier,<sup>51</sup> numerous scholars have affirmed that the maxim of *sic utere tuo ut alienum non laedas* holds that a state has a duty to refrain from acts that would cause injury to persons or property located in the territory of another state. The 1987 Restatement (Third) of the Foreign Relations Law of the United States provides that:

[A] state is obligated to take such measures as may be necessary, to the extent practicable under the circumstances, to ensure that activities within its jurisdiction or control (a) conform to generally accepted international rules and standards for the prevention, reduction, and control of injury to the environment of another state or of areas beyond the limits of national jurisdiction; and (b) are conducted so as not to cause

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50. Case 21/76, *Handelskwekerij G.J. Bier BV v. Mines de potasse d'Alsace SA*, 1976 E.C.R 1735, discussed in Guruswamy, *supra* note 43, at 344.

51. See *supra* note 43 and accompanying text..



significant injury to the environment of another state or of areas beyond the limits of national jurisdiction.<sup>52</sup>

Declarations by scholars who drafted the Restatement are generally regarded as sources of international law, though of course lacking the force of actions by nations acting under *opinio juris* (acts by nations initiated because of their belief that such conduct is required by international law).<sup>53</sup> “International practice shows that the States have now accepted a general principle that they must answer for environmental harm caused by activities they have carried out or allowed within their own territory or by activities that are under their control.”<sup>54</sup> One scholar has argued that state responsibility should be reinforced by the concept of due diligence. This concept would require a demonstration that the State exercised care in controlling dangerous substances, and also

“ . . . offers a workable standard by which to judge the responsibility of States for environmental harm. It has the added advantage that its definition in treaty practice can be related to the needs of each case, and offer clear evidence of the support of States. What is needed is the elevation of this standard into general customary law: in effect a globalization of environmental obligations comparable to what has been achieved by the Law of the Sea Convention and related treaties.”<sup>55</sup>

International liability can even extend beyond the nation which has directly been impacted by the environmental impacts. Under the

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52. RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW § 601 (1987).

53. DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 311-312 (Foundation Press 2d ed. 2002) (1998).

54. Riccardo Pisillio-Mazzeschi, *Forms of International Responsibility for Environmental Harm*, in INTERNATIONAL RESPONSIBILITY FOR ENVIRONMENTAL HARM 15 (F.Francioni & T. Scovazzi eds, 1991).

55. See Alan E. Boyle, *State Responsibility and International Liability for Injurious Consequences Not Prohibited by International Law: A Necessary Distinction?* 39 INT’L & COMP. L.Q. 1, 22-23 (1990).

concept of *erga omnes* (responsibilities that extend to all nations), some norms are of such consequence that the offending State owes a duty to the entire international community.<sup>56</sup> The concept of *erga omnes* was argued by Australia and New Zealand in the *Nuclear Test* cases, claiming that the right to be free of radioactive fallout was a community right.<sup>57</sup> The corollary and reinforcing concept of *jus cogens*, defined by article 53 of the Vienna Law of Treaties as “a peremptory norm of general international law . . . accepted by the international community of states as a whole as a norm from which no derogation is permitted and which can be modified only by a subsequent norm of general international law having the same character,”<sup>58</sup> offers yet another important source of international responsibility for environmental pollution.

Thus, on the basis of treaties, customary international law, and the prevailing view of scholars, nation states are responsible for pollution of the environment of other countries. Operationally, this means that nations have created schemes of civil liability so as to avoid the diplomatic problems that arise from nation versus nation legal actions. At the very least, where schemes of civil liability are insufficiently developed, there are many instances in which claims have been settled by polluting sources within nations even where international liability is conceded. The principle of state responsibility to recompense either by settlement, or to shift the responsibility by generating access for remedial action to private entitles, suggests that civil lawsuits might be brought against private actors within impacted states, or in the case of nations whose very existence is threatened, resort to international tribunals for relief, even if that relief is only declaratory in those situations in which the polluting nation withdraws itself from the jurisdiction of world tribunals as in the case of the United States when it was sued by

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56. See *Barcelona Traction, Light and Power, Ltd. (Belgium v. Spain)*, 1970 I.C.J. Rep. 3.

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

58. Vienna Convention on the Law of Treaties, May 23, 1969, 1155 U.N.T.S. 331. Slavery and genocide are usually given as examples of conduct which would be forbidden and void in any agreement which promoted such behavior.



Nicaragua for American support to insurgent groups seeking to overthrow the Nicaraguan government.<sup>59</sup>

Surely those nations which continue to emit substantial amounts of greenhouse gases may be subject to liability for the severe impacts inflicted by the climate change which has now been established scientifically as caused by anthropogenic activity. Every requirement of liability under international environmental law, under either the doctrines of State Responsibility or Civil Liability is met by a situation in which the injury is already more than substantial,<sup>60</sup> and is potentially catastrophic. The American Geophysical Union, "one of the nation's largest and most respected scientific organizations," decided that global warming was an establishing fact.<sup>61</sup> At its annual meeting in 2003, the AGU issued a consensus statement which declared, "Natural influences cannot explain the rapid increase in global near-surface temperatures. As best as can be determined, the world is now warmer than it has been at any point in the last two millennia, and, if current trends continue, by the end of

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59. The case is *Military and Paramilitary Activities (Nicar. v. U.S.)*, 1986 ICJ 14 (June 27). The unsuccessful U.S. challenge to the jurisdiction of the I.C.J. is: *Military and Paramilitary Activities (Nicar. v. U.S.)*, 1984 ICJ 392 (Nov. 26). The withdrawal is: *Statement on the United States Withdrawal from the Proceedings Initiated by Nicaragua in the International Court of Justice*, Jan. 18, 1985, 24 ILM 246.

60. See The Experts Group on Environmental Law of the World Commission on Environmental Development, *Final Report of the Experts Group on Environmental Law on Legal Principles for Environmental Protection and Sustainable Development*, arts. 11, 12, 21, reprinted in Munro, R.D., *Environmental Protection and Sustainable Development: Legal Principles and Recommendations* 35 (Martinus Nijhoff 1987). See also RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW, §§ 601(2), 601(3), 602 (1) (1987). In the case of the United States, for example, the problem of attribution of private activity to governmental policies and conduct is easily established by the Bush administration refusal to commit to even the modest, and generally agreed insufficient, goals established by the Kyoto protocol.

61. Elizabeth Kolbert, *The Climate of Man—I*, THE NEW YORKER, April 25, 2005, at 56, 58.

the century it will likely be hotter than at any point in the last two million years.”<sup>62</sup>

Finally, the U.S. policies do not comply with the “precautionary principle” subscribed to by the U.S. in the Rio de Janeiro Bio Diversity Convention.<sup>63</sup> The precautionary principle has been expansively defined and discussed in the context of global warming in an article by leading scientists:<sup>64</sup>

A 1998 consensus statement characterized the precautionary principle this way: ‘when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.’ The statement . . . listed four central components of the principle: taking preventive action in the face of uncertainty; shifting the burden of proof to the proponents of an activity; exploring a wide range of alternatives to possibly harmful acts; and increasing public participation in decision making. . . .

The precautionary principle encourages policies that protect human health and the environment in the face of uncertain risks.

The precautionary principle has arisen because of the perception that the pace of efforts to combat problems such as climate change, ecosystem degradation, and resource depletion is too slow and that environmental and health problems continue to grow more rapidly than society’s ability to identify and correct them. In addition, the potential for catastrophic effects on global ecologic systems has weakened confidence in the abilities of environmental science and policy to identify and control hazards.

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62. *Id.*

63. Rio Declaration on Environment and Development, June 14, 1992. UNCED Doc. ACONF.151/5/Rev.1, 31 I.L.M. 874 (1992).

64. See David Kriebel et al, *The Precautionary Principle in Environmental Science*, ENVIRONMENTAL HEALTH PERSPECTIVES, Sep. 2001, at 871-76.



The great complexity, uncertainty, and potential for catastrophe from global climate change are among the strongest motivators for those urging precaution in environmental policy... For human populations, the rates of change and wide swings in weather are of chief concern, as ice core records indicate that increased climatic variability may be associated with rapid climate change events and changes in the ocean thermohaline circulation. Together, warming and more extreme weather have begun to alter marine life and the weather patterns that affect infectious diseases, their vectors, and hosts. The unprecedented scale of this hazard justifies reexamination of environmental monitoring systems and paradigms.<sup>65</sup>

Directly criticizing the current U.S. environmental policy, the scientists declared that it “often seems to be more reactionary than precautionary, requiring a high degree of certainty of harm before preventive action is taken, and emphasizing the management of risks rather than their prevention.”<sup>66</sup>

*C. Ozone Depletion as an International Customary Law Violation  
Omnia Erges: Transboundary Contamination and the Protection of  
Human Rights*

Much has been written over the last two decades about the ozone hole over the Antarctic.<sup>67</sup> Ozone, which is more infamous for air pollution caused by automobile exhausts (ground level oxygen molecules combine with stray oxygen atoms found in catalytic trace gases forming ozone as an air pollutant), at “high levels” is a critical

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65. *Id.* at 871-72.

66. *Id.* at 872.

67. For an example of the series of articles that have appeared since the hole was first discovered, see, e.g., Andrew Revkin, *Record Ozone Hole Refuels Debate on Climate*, N.Y. TIMES, Oct. 10, 2000 at F3. A year later, the same reporter wrote an article entitled *Ozone Layer Is Improving, According To Monitors*, N.Y. TIMES, July 30, 2003 at A11, col. 6.

factor in sustaining life on the planet. Collecting in a belt some five to thirty level miles in the stratosphere, ozone molecules naturally collect when solar ultraviolet rays collide with ordinary oxygen molecules. Free oxygen is created from the collisions that recombine with ordinary oxygen molecules to form ozone molecules. In turn, the ozone molecules absorb solar ultraviolet radiation, forming a shield that prevents most ultraviolet radiation from reaching the earth's surface.

Critical though it is, there is a fragility to the shield which is vulnerable to chemical reactions, some natural, and some anthropogenic. The principal tropospheric trace gases that impact the ozone shield are: methane ( $\text{CH}_4$ ), nitrous oxide ( $\text{N}_2\text{O}$ ) source gases for stratospheric sulfate aerosols ( $\text{OCS}$ ,  $\text{CS}_2$ ) carbon dioxide ( $\text{CO}_2$ ) and halocarbons ( $\text{CFC}_2$ ). Naturally generated, methane breaks apart and releases atoms that reduce ozone to oxygen. Nitrous oxide also is split by ultraviolet radiation.

These natural processes have been disturbed, to put it mildly, by chemical processes generated by humans. A class of compounds (chlorofluorocarbons known as "halocarbons" that include chlorofluorocarbons or "CFCs") are inert gases that were, until recently, widely used as refrigerator and air conditioner coolants, propellants in spray cans, solvents, plastic foam, and medical equipment sterilization. As they percolate into the stratosphere, CFCs are broken apart by ultraviolet rays, releasing stray chlorine atoms. Each chlorine atom ( $\text{Cl}$ ) colliding with an ozone molecule results in a two step chemical reaction, that in "thousands of times destroys ozone molecules. "For every chlorine atom . . . [released], 100,000 molecules of ozone are removed from the atmosphere."<sup>68</sup> As two scientists have put it, "The continued use of CFCs is particularly tragic, since alternatives to the utilization of CFCs as refrigerants have existed since 1981. Despite resistance from the CFC industry CFCs are more than mere statistics, and the American public has been alerted to these concerns."<sup>69</sup> Another scientists has said that,

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68. See F. Sherwood Rowland & Mario Molina, *Stratosphere Sink for Chlorofluoromethanes: Chlorine Atom-Catalysed Destruction of Ozone*, 249 NATURE 310 (1974). (The authors are generally credited as being the first scientists to explain the process by which CFC's deplete the Ozone layer).

69. See John Kindt & Samuel Menefee, *The Vexing Problem of Ozone Depletion in International Law and Policy*, 24 TEX. INT'L L.J.



[I]f the ozone lawyer diminishes over population areas — and there is some evidence that it has begun to do so, although nowhere as dramatically as in the Antarctic—the consequences could be dire. Ultraviolet radiation, a form of light invisible to the human eye, causes sunburn and skin cancer; in addition, it has been linked to cataracts and weakening of the immune system. Without ozone to screen out the ultraviolet rays, such ills will certainly increase. The National Academy of Sciences estimates that a one percent decline in ozone levels could cause 10,000 more cases of skin cancer a year in the U.S. alone, a two percent increase.”<sup>70</sup>

Scientific calculations suggest that, between now and 2075, ozone depletion could cause “an extra 200 million cases of skin cancer, as well as less specific damage to human immune systems and to plant and aquatic life.”<sup>71</sup> As Kindt and Menefee warn, “theoretically, the complete destruction of the ozone layer would result in the extinction of life on earth.”<sup>72</sup>

Facing this threat, the response was perhaps the most successful episode in environmental protection. As Carol Petsonk has said, “UNEP’s most significant environmental successes have been the 1985 Vienna Convention and the 1987 Montreal Protocol.”<sup>73</sup>

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261, 262-67 (1989). Much of the science of this article is adapted from their discussion.

70. Michael Lemonick, *The Heat Is On: Chemical Wastes Spewed into the Air Threaten the Earth’s Climate*, TIME, Oct. 19, 1987 at 61.

71. See Kindt and Menefee, *supra* note 69, at 265.

72. *Id.*

73. See Carol A. Petsonk, *The Role of the United Nations Environment Programmed (UNEP) in the Development of International Environmental Law*, 5 AM. U. J. INT’L & POL’Y 351, 367-72 (1990). The agreements are: Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, U.N.Doc. UNEP/IG.53/5/Rev. 1, 26 I.L.M. 1529 (1987), and Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 15550 (1987), augmented by meetings of the parties 1992 – 1995 in Copenhagen, Vienna, and Montreal.

The discovery of the Antarctic ozone hole galvanized the international community, particularly in the developed world, which led to the two conventions which created a regime which will, eventually if the developing world can be won over, eliminate emissions that deplete the ozone layer. Subsequent to Montreal, the intractable problem of methyl bromide emissions was tackled, and though still in wide use in the United States and elsewhere as an agricultural pesticide, is the subject of the Copenhagen agreements to phase out the use of the chemical, as well as an accelerated phase-out of chlorofluorocarbons.<sup>74</sup> Perhaps of greater long-range consequence, a fund was also established in the Denmark conference to establish a multilateral fund to help developing countries switch to non-depleting chemicals. The tension in the Stockholm and Rio de Janeiro agreements, and other conventions, affirming the right of developing nations to develop while requiring that they protect the environment, remain an unresolved conundrum.<sup>75</sup>

To be sure, the reduction and agreements to eliminate ozone-depleting chemicals had much to do with the precision of the scientific analysis, the all but unanimous acceptance of the calculations, and of supreme importance, the ready availability of a substitute a technology. Although there is a general consensus that anthropogenic emissions are creating a greenhouse effect leading to potential disastrous climate change and its consequences, the science which underlies the analysis is order of magnitude more complicated than which led to the ozone consensus. Moreover, the cost-benefit analysis that inevitably accompanies the discussions to switch to seemingly more expensive (in the short term) fuel sources and the consequent impacts on industrial outputs has led technologically developed nations such as the United States to “foot drag” when it

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74. The U.S. Clean Air Act banned domestic production and importation of methyl bromide after January, 2001. Because of its value as a fumigant, efforts to ban the pesticide have proved difficult, with developing nations attempting to delay prohibition until 2010. See DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY, 556 (Foundation Press 2d ed. 2002) (1998).

75. For example, in 2002, China commenced operation of a plant to produce methyl bromide, thereby expanding a production capacity that had exceeded the combined output of all other developing countries. See *id.*



comes to compliance. Indeed, thus far, the United States, generating twenty-five percent of greenhouse gases,<sup>76</sup> refuses to even join the modest effort launched at Kyoto.

Nevertheless, the ozone agreement is a precedent which also has an inspirational value. Faced with the threat that greenhouse emissions could create climatic disruptions on a catastrophic scale, there at least remains that possibility that concerted international action could lead to the cooperation necessary for a worldwide reduction of greenhouse gas emissions. It is at this juncture—the global necessity to reduce greenhouse emissions, and the interconnectedness and probable nature of the disastrous harm—that human rights doctrines become critically relevant. The contemporary prevalence of constitutional protections for a clean environment, and the development in customary international law of the recognition of the right to be free from transboundary contamination that threatens a clean environment is, as Noralee Gibson has written:

. . . [I]s a right based on need. . . . It is even more fundamentally important than individual human rights; it is concerned with the collective survival of all human beings. It is this most important objective to which the right to a clean environment should be linked and not to individual human rights. Granting of rights to the environment as a whole is a recognition of its value, not to us as consumers of environmental amenities, but as an integral part of life itself. . . .

The need for survival is universal due to every organism's inherent need and desire to survive. This need is not linked to notions of culture, therefore cross-cultural analysis is not required to determine the legitimacy of such a right. . . .

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76. "Here it is pertinent to consider one fact: the U.S. with 4 per cent of world population accounts for 36.1 per cent of the world's carbon dioxide emissions. When all greenhouse gases are taken into account the U.S. contribution is nearly a quarter of the world's total." DINYAR GODREJ, *THE NO-NONSENSE GUIDE TO CLIMATE CHANGE*, 94 (Oxford, 2001).

As part of the universe, all humans have a right to a clean environment, but to say they have this right is to also impose on all humans the duty of respecting the environment.<sup>77</sup>

*D. The Acid Rain Disputes as Precedents for Climate Change Remedies*

The acid rain conflicts between the Canada and the United States, and in Europe between Sweden and Germany, raise the same issues of transboundary contamination present in the ozone and climate change phenomena. In Europe, they have been resolved through the European Union, and bilateral negotiations have marked some resolution of the dispute between Canada and the United States (as well as between different states of the United States). Most of these negotiations and resolutions constitute a *de facto* recognition of the duty of nations not to contaminate the environment of their neighbors, or of other countries.

The scientific analysis of acid rain is complex. With respect to acid rain, there appears to be an interactive effect between chemical processes in the contamination and the environment of downwind receptor nations. Thus acid rain, its effects and impacts, are not as clear as that of ozone depletion, but perhaps more certain than that of climate change—and no comparison as to the ultimate harm that climate change holds for mankind when viewed from the perspective of the damage inflicted by acid rain. For now, it can safely be said that the acid rain resolutions are further evidence of the customary international law against transboundary contamination. Moreover, at the very least acid rain constitutes an assault on the environment and can hardly be said to respect the human right to a clean environment.<sup>78</sup>

Acid deposition by rainfall and sulfur and nitrogen oxide emissions impact ecosystems as well as human health. The direct effects include acidification of lakes and streams, plant damage as well as indirect effects on human health or reduced visibility.

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77. Noralee Gibson, *The Right to a Clean Environment*, 54 SASKATCHEWAN L. REV. 5, 14-16 (1990).

78. JAMES REGEMS & ROBERT RYCOFT, *THE ACID RAIN CONTROVERSY*, 35-39, 48-51 (1980).



Conclusive evidence points to chemical and biological changes, including fish kills, in lakes and streams that have limited capacities to neutralize acidic inputs. Many are about the harmful, long-term effects of acid deposition on trees—particularly spruce, pine, aspen and birch. Concern has also been expressed about the impact of acid deposition on outdoor sculpture, historic monuments, buildings, and other structures.<sup>79</sup>

In two of the three<sup>80</sup> major bi- or multi-lateral agreements to

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79. *Id.*

80. There is an Asian analogue of the European and North American agreements, known as the ASEAN Cooperation Plan on Transboundary Pollution, adopted at the ASEAN Environmental Ministers Meeting in Kuala Lumpur, Malaysia, October 21, 1994. “The immediate catalyst for the ASEAN plan may be traced to the problem of transboundary haze which, between August and October 1994, covered Malaysia, Singapore and parts of Indonesia. Caused by land clearing . . . the haze caused unhealthy atmospheric pollution levels in the three countries, resulting in a number of asthma related hospitalizations and delayed air flights. Despite the identification of the cause of the haze and evidence of transboundary harm, there are no express references in the ASEAN Plan to Principle 21 of the Stockholm Declaration and issues of state responsibility. Instead, it emphasizes the need for inter-state cooperation and lays out a framework for shared strategies, coordinated activities and the adoption of common standards and training. . . . In contrast to treaties in other regions, the ASEAN Plan is notable for the absence of concrete standards and binding obligations.” EDITH BROWN WEISS ET AL., *INTERNATIONAL ENVIRONMENTAL LAW AND POLICY*, 601-603 (1998).

Haze from slash-and-burn fires continued to plague South East Asia. See Seth Mydans, *Drought in Borneo Feeds Fear of New Forest Fires in Asia*, N.Y. TIMES, Feb. 23, 1998, at A3. Frank Clifford, *Crop-Clearing Fires Polluting Pacific Isles’ Air, Researchers Say*, THE SEATTLE TIMES, Mar. 31, 1998, at A7. See also Nicholas A. Robinson, *Forest Fires as a Common International Concern: Precedents for the Progressive Development of International Environmental Law*, 18 PACE ENVTL. L. REV. 459 (2001) who states that “. . . the most extensive and acute forest fire phenomena were found in South East Asia. The fires of 1997 in Kalimantan and Sumatra, Indonesia, and in parts of Malaysia and Papua, New

reduce acid rain, the parties to the negotiations expressly relied on the principle that transboundary contamination was a violation of international law. In the Canadian-United States dispute, Canada expressly relied on international law to stem the transboundary flow of sulphur dioxide emissions so that the damage to Canadian lakes and rivers could be reduced so that they might be recovered.<sup>81</sup> Canada marshaled transboundary harm authorities, among them, *Lac Lanoux*, *Trail Smelter*, *Corfu Channel* disputes,<sup>82</sup> and on Principle 21 of the Stockholm Declaration on the Human Environment.<sup>83</sup> When the Reagan administration claimed that more research was needed before the problem could be solved, state and NGO groups sued the government under section 115 of the Clean Air Act, ironically foreshadowing the actions pending today in the federal courts.<sup>84</sup>

Nonetheless, Canada returned the pollution in kind. A bilateral research group established that the Great Lakes were being polluted by long-range transport of airborne pollutants from Canada, and that acid rain was falling in both nations. However, it was not until the

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Guinea produced plumes of smoke that blanketed Singapore and Malaysia and reached the Philippines and Thailand. To imagine the breadth of the disaster, it is as if forest fire smoke covered an area as extensive as the United States, or both East and West Europe.” *Id.* at 461.

81. See Weiss, *supra* note 80, at 578—581 (1998), “By 1988, Canada claimed that 14,000 lakes and at least nine salmon-bearing rivers . . . could no longer support aquatic life . . . and also raised fears about the large percentages of the best agricultural land (85 percent) and forests (50 percent) in eastern Canada receiving high levels of acid rain.

82. See *supra* note 43 and accompanying text.

83. Stockholm Declaration of the United Nations Conference on the Human Environment. Adopted by the U.N. Conference on the Human Environment at Stockholm, 16 June 1972, Stockholm, June 5—16, 1972, U.N.Doc. A/CONF.48/14/Rev. 1 at 3 (1973). U.N. Doc. A/CONF.48/14 at 2—65 and Corr. 1 (1972), 11 I.L.M. 1418 (1972).

84. See *supra* note 8 and accompanying text. The acid rain lawsuits were lost. See *Thomas v. N.Y.*, 802 F.2d 1443 (D.C. Cir. 1986) *cert. denied*, 482 U.S. 919 (1987); *Ontario v. EPA*, 912 F.2d 1525 (D.C. Cir. 1990).



election of George Bush in 1989 that changes were made to the Clean Air Act, requiring reductions of sulphur emissions by ten million tons by 2000, thus meeting Canada's demands for a 50 percent decrease in depositions of sulphur dioxide. Two years later, Canada and the United States announced the Agreement on Air Quality, committing each nation under Article IV, Paragraph 2 "to specific objectives for emissions limitations or reductions of sulphur dioxide and nitrogen oxide, which will reduce transboundary flows of acidic deposition precursors."<sup>85</sup>

As of 1995, a report of the International Joint Commission of Canada and the United States, sulphur emissions in the U.S. had declined by 51 percent since 1980, leading to a decrease in water sulfates and improved water quality in both Canada and the United States.<sup>86</sup>

The acid rains of Europe were also subject to multi-lateral reductions. The size and proximity of Europe's nations meant that acid rain was continental in scope, "[T]he impact of acid deposition is distributed unevenly: some countries are "net importers" and others "net exporters of the precursor emissions of SO<sub>2</sub> and NO<sub>x</sub> . . . For example, more than 60 percent of the sulphur deposition in Norway, Sweden, Switzerland, Austria, the Netherlands and Eastern Canada originates in other countries."<sup>87</sup> The multi-national and regional extent of the problem led to extensive and protracted negotiations eventually led to a staging of agreements, with a Sulphur Protocol<sup>88</sup> signed by 21 of 30 nations who were party to the original Convention on Long-Range Transboundary Air Pollution.<sup>89</sup> The Sulphur Protocol was followed by a nitrogen oxide (NO<sub>x</sub>) protocol which called for a two-stage approach as to the obligations

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85. Agreement on Air Quality, March 13, 1991, 30 I.L.M. 676 (1991).

86. See Weiss, *supra* note 80, at 585..

87. See Amy A. Fraenkel, *The Convention on Long-Range Transboundary Air Pollution: Meeting the Challenge of International Cooperation*, 30 HARV. INT'L L.J. 447, 451-452 (1989).

88. Protocol on the Reduction of Sulphur Emissions or Their Transboundary Fluxes by at Least 30%. July 8, 1985, 27 I.L.M. 707 (entered into force Sept. 2, 1987).

89. LRTAP, concluded at Geneva, Nov. 13, 1979. 18 I.L.M. 1442 (1979), T.L.A.S. No. 1051.

of the parties “to control and/or reduce national annual emissions of nitrogen oxides or their transboundary fluxes.”<sup>90</sup>

As in the case of Canada and the United States, European nations were no doubt driven by self-interest—in most cases they were both receptors as well as polluters—in reaching multilateral arrangements to combat transboundary air pollution. There also was a general consensus that cross-border pollution was also a violation of international law, and that they had a legal or political obligation to respond, with naturally a wide-range of responses. The complex nature of acid rain was also of consequence:

While there is general agreement that SO<sub>2</sub> and NO<sub>x</sub> may be carried miles away from their source of emission to damage other areas, there remains the difficulty of linking a specific country’s emissions to damage in another country. In the European context, where so many countries are involved, the question is especially complex. Weather patterns, chemical transformation in the atmosphere and interaction with other pollutants further complicate the uncertainty.<sup>91</sup>

To the extent that acid rainfall and transboundary air pollution was complex in Europe, it resembles the problem of combating climate change. But, as in the ozone dispute, the methods of control, though not cost-free, involve very specific chemicals with proven techniques readily available (if not cost-free).<sup>92</sup> And as in the

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90. 28 I.L.M. 212 (1989). The NO<sub>x</sub> protocol called for a much wide range of policy options than had the sulphur agreements. Emissions were frozen at 1987 levels, but U.S. style command and control strategies were implemented. As of 1997, parties were still gathering information for a “critical loads” approach.” The protocol allowed for the possibility that more stringent measures would be undertaken than required by the agreement, and there was substantial disagreement, particularly by the more developed nations, about the overall effectiveness of the agreement.

91. Fraenkel, *supra* note 87, at 459.

92. “[T]he 30% reduction clause in article 2 of the Sulphur Protocol was a substantive provision of a very general, simple and straightforward nature that did not take account of any special



case of the Kyoto protocol, while there was discontent about the pace of control of the polluting emissions, there was no real disagreement about the obligation to reduce, as much as possible, the sources of acid rain.

### III. CONCLUSION

Environmental litigation has a powerful role in the future of how the challenges of climate change will be confronted, representing an extension of domestic political conflict over environmental policy. Insurgencies by state and local governments to impact federal policies have moved beyond sporadic protests to organized resistance. Lawsuits against federal agencies represent new and important fronts in the struggle to define federal policy—or lack thereof. Common law nuisance claims represent a time-tested strategy to fill legislative lacunae that leave varieties of environmental pollution unaddressed.

The lassitude and hostility of agencies to broad construction of their responsibilities for addressing the root causes of global warming—the emission of green house gases—have been challenged by petitioning the Environmental Protection Agency to regulate end-of-pipe automobile emissions of carbon dioxide. The frustration with automobile manufacturers' emphasis on those product lines which contaminate the most, and their failure to produce automobiles powered by alternative and cleaner sources of fuel, have left environmental advocates and concerned local and state governments with no alternative but to seize the environmental initiative. The claim of agencies that they have no legislative predicate to regulate green house gas emissions has led to the appeal of an agency stance which seems ideologically, rather than scientifically, driven.

The petition to trigger application of the Clean Air Act invokes the substantive powers of the EPA to fulfill its mandate to regulate pollutants which have the potential to inflict catastrophic harm on humanity. By contrast, the charge against the Overseas Private Investment Corporation and the Export-Import Bank is that

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conditions existing in the member States of the UN ECE." See Weiss, *supra* note 80, at 595.

the agencies shun an important procedural tool. Environmental impact studies are among the fundamental tools of environmental protection. The lawsuit asks for no more than that the agencies should conduct the kind of environmental study that would precede major federal actions far less portentous than the projects sponsored by the defendants. The plea that OPIC and Ex-Im not fund projects without at least knowing whether, and to what extent, they exacerbate climate change, seems a modest attempt to ensure that federal power not be exercised until the public is fully informed about the consequences of their actions. This public awareness is an important environmental safeguard even where the agencies have the discretion to implement unwise policies. Environmental Impact Statements, admittedly essentially procedural, at least officially publicize the extent of the harm of projects paid for with tax dollars.

If domestic strategies appear problematic, there are international environmental law paradigms and precedents which may stem green house gas emissions. The impacts of climate change on the cultural life and economic life—and physical survival—of indigenous people finds expression in the human rights-premised appeal to the Inter-American Commission of the Organization of American States. This pending legal strategy urges the protection of the first peoples of the Arctic region, the Inuits of Northern Canada. Such a petition, again with largely political effects, has ramifications for the fates of indigenous peoples all over the planet, the earth citizens who will suffer the most but produce no green house emissions of any consequence.

Indeed, the warming of the Arctic regions represents a threat to human survival everywhere. For “the tundra in northern Canada has absorbed large quantities of heat-trapping methane and carbon dioxide. As the temperature rises, the tundra is beginning to thaw and release those gases back into the atmosphere”<sup>93</sup>—on a colossal scale. The first peoples of the Arctic region, and the sea-level inhabitants of Oceania and other low-lying lands, are surrogates for all of humanity. Save them, and developed nations ultimately save themselves and many features of life as presently known on the planet.

Finally, developing norms and paradigms of international environmental law contain doctrines and precedents that might be used to combat recalcitrance about, or passivity to, disastrous

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93. ROSS GELBSPAN, *BOILING POINT*, 59 (2004).



climate change. The jurisprudence of transboundary pollution, and the rights of receptors of environmental harm, contain legal and equitable principles which posit both state responsibility and civil liability for pollution of the global commons. Forae exist in which coercion might be exercised and the battle for public opinion might be addressed.

Though not nearly as complicated as the cause and the proposed responses to green house gas emissions, the relatively successful achievement of the international community to significantly reduce the chemicals which destroy the ozone layer holds out hope that international cooperation on a truly global scale will seriously impact the growing accumulation of heat-trapping gas emissions. Though the solution of the ozone-depletion problem was aided greatly by the development of substitute chemicals and technology for refrigeration, significant reductions in the production of harmful chemicals by developed nations suggests that multi-lateral cooperation—especially when the United States assents—might ultimately, though perhaps too late, characterize the response to global warming.

As the ozone-hole crisis generated a tentatively successful international response, so too did the bi- and multi-lateral agreements to effectively combat acid rain. The complex multi-lateral arrangements within the European Community to combat the effects of acidic precipitation establishes a benchmark by which the zero-sum struggle at the heart of the political conflict over solutions to climate change might be measured.

The collective legal experience of the international community can indeed provide important ways to leverage the political systems, which must ultimately decide the fate of humanity. The survival of the human species and the ecology in which it can flourish, if not the abiding planet Earth, is at stake.