

The Global Environmental Agenda: Origins and Prospects

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SUMMARY

We have been moving rapidly to a swift and pervasive deterioration of our environmental assets. In response, there has been an upsurge of international environmental law and diplomacy, a vast outpouring of impressive scientific research, and thoughtful policy analysis. What has emerged over the past two decades is the international community's first attempt at global environmental governance.

Two developments were needed before the international environmental movement could be born: (1) environmental policy had to be legitimized at the national level, and (2) the life-sustaining processes of the biosphere had to be perceived as a common concern of all peoples. The first phase of global environmental governance has been instrumental in raising domestic and international awareness for environmental issues, but overall it has been marked more by failure than success. The threatening trends that spurred international attention twenty years ago persist essentially unabated, ozone depletion being the principal exception. It is clearly time to launch a second phase, moving us from talk to action.

Three broad paths to environmental governance can be discerned. First, new institutions and norm-setting procedures are needed at the international level. Second, bottom-up initiatives from non-government organizations (NGOs), businesses, local governments, and other actors should be encouraged. Third, we need to address more directly the underlying causes of environmental degradation, such as population growth, poverty and underdevelopment, inadequate technologies, and market failure brought on by failure to insist on environmentally honest prices.

THE NEW ETHICAL IMPERATIVE

We have entered a new period in our relationship with the natural world. Human influence is pervasive and deep. We impact hugely on the great life support systems of the planet. We are now at the planetary controls, whether we like it or not. Scientist Peter Vitousek and his co-authors stated the matter forcefully in a 1997 article in *Science*:

All of these seemingly disparate phenomena trace to a single cause – the growing scale of the human enterprise. The rates, scales, kinds, and combinations of changes occurring now are fundamentally different from those at any other time in history; we are changing earth more rapidly than we are understanding it. We live on a human-dominated planet – and the momentum of human population growth, together with the imperative for further economic development in most of the world, ensures that our dominance will increase.... Humanity's dominance of Earth means that we cannot escape responsibility for managing the planet. (Vitousek et al., 1997)

Scientists are generally a cautious lot, so when our most respected scientists issue a plea for “active management of the planet,” we must take notice. Aldo Leopold, perhaps the most famous graduate of the school that I now serve as dean, noted that “one of the penalties of an ecological education is that one lives alone in a world of wounds.” There is a lot of bad news in the world of environmental affairs, but there is good news as well. One piece of good news is that the plea of Vitousek is but the latest in a long line of appeals from the scientific community, urging governments and others to take the task of protecting the global environment more seriously.

Starting in the 1980s, governments and others did indeed take notice and began the process of assuming responsibility for planetary management. What has emerged over the past two decades is the international community's first attempt at global environmental governance. All is not well yet in this new arena, but it is important to acknowledge what has been accomplished.

Before examining these accomplishments in global governance of the environment, however, a quick observation about vocabulary is in order. “Global governance” does not imply a global government, nor

does it include only the actions of governments. Many non-governmental organizations (NGOs), businesses, and communities are already playing large roles in the emergence of global environmental governance as we know it today.

It is also interesting to contrast the use of language in the environmental field and the field of economics.

The phrase “managing the global economy” comes rather easily. It is frequently heard because it is a priority enterprise of governments, multilateral financial institutions, and many others. But “managing the global environment”? It still sounds futuristic, but it shouldn’t. The global environment is more of an integrated system than the global economy. It is even more fundamental to human wellbeing. It is impacted powerfully by human activities, and it requires collective management.

ORIGINS OF THE GLOBAL ENVIRONMENTAL AGENDA

An agenda of the principal large-scale environmental concerns of the international community has been defined. In response to this agenda, there has been an upsurge of international conferences, negotiations, action plans, treaties, and other initiatives. New fields of international environmental law and diplomacy have been born. There has been a vast outpouring of impressive and relevant scientific research and policy analysis. Increasingly sophisticated actions by an ever-stronger international community of environmental and other NGOs have flourished, ranging from the global to the local, from civil disobedience to analytical think-tank publications.

Both national governments and multilateral institutions, from the United Nations to the international development banks, have recognized these concerns, creating major units to address global-scale issues. While many multinational corporations are still in denial, others have become highly innovative and have moved ahead with

impressive steps, often before their governments. In academia, international environmental affairs has become a major subject of intellectual inquiry and teaching. A large body of scholarly analysis now exists. And we are fast-approaching another of those milestone events: the 2002 World Summit for Sustainable Development in Johannesburg, which follows the 1972 Stockholm Conference on the Human Environment and the 1992 Rio Earth Summit.

Large-scale environmental concerns have attracted increasing attention from governments, NGOs, multilateral agencies, and even the business community. How did this agenda emerge? How were the issues identified and framed? What has been accomplished to date in the area of global environmental governance? By whom? How did these actors gain recognition and political traction?

The Rise of Domestic Concern: The U.S. Environmental Movement

To put these issues in perspective, it is useful to start in the 1960s with the emergence of the modern era of environmental concern. It was driven by domestic, mostly local, issues: local air and water pollution, strip-mining, highway construction, noise pollution, dams and stream channelization, clear-cutting of forests, hazardous waste dumps, nuclear power plants, exposures to toxic chemicals, oil spills, suburban sprawl. Concern about these issues gathered strength throughout the 1960s.

In the United States, this concern led to the National Environmental Policy Act in December 1969, and to the first Earth Day a few months later. Within the short span of a few years in the early 1970s, the Environmental Protection Agency and the Presidential Council on Environmental Quality were established, the Clean Air and Water Acts and other major federal legislation were passed, and the federal courts were deluged with lawsuits brought by a new generation of environmental advocacy organizations, often funded by major U.S. foundations. It was during this period that groups like the Natural Resources Defense Council and the Environmental Defense Fund were launched.

The new environmental movement handed the business community a long string of defeats, and it often left scientists anxious in their efforts to keep up. Economists were aghast, and ecologists, even lawyers, were lionized. Large majorities of the public were strongly pro-environment. The news media were full of stories, and the government responded with far-reaching, expensive requirements and tough deadlines for industry. A tipping point — a phase change — was reached. What was once impossible became inevitable. The fire was lit.

How did this happen? A number of factors came together (Speth, 1985, 1988). First, there was the rising demand for environmental quality in an increasingly affluent post-war population. Between 1950 and 1970, U.S. per capita income rose by fifty-two percent. People sought the amenities of the suburbs, and by 1970 there were more Americans in the suburbs than in cities or rural areas. National Park visitation doubled between 1954 and 1962 and doubled again by 1971 (U.S. Council on Environmental Quality, 1979).

Second, pollution and blight were blatant and inescapable. Smog, soot, and the resultant smarting eyes and coughs from air pollution, streams and beaches closed to fishing and swimming because of water contaminants, plastic trash and toxic chemicals that would not go away, birds threatened by DDT, pesticide poisoning, fish kills, power plants and highways in the neighborhood, marshes filled for new track houses and streams channelized for navigation and drainage – all these threats were highly visible and impossible to ignore.

Third, the social upheavals of the 1960s had given rise to a new generation of questioning, politically active, and socially concerned young people. The civil rights and anti-war movements showed that political activism could work. Some of the active figures were also not so young. Based on the teach-ins used to protest the Vietnam War, Wisconsin Senator Gaylord Nelson came up with the concept of a national teach-in for the environment, and thus launched what became the first Earth Day.

Fourth, there was a widespread view that major corporations were getting away with murder. Eloquent writers emerged to make the case: Ralph Nader wrote *Unsafe at Any Speed* in 1965. Rachel Carson published *Silent Spring* in 1962. The play had to have a villain, and corporate America was it.

Fifth, the likely opposition – the business community – was caught off guard, without time to marshal its troops or gather its ammunition. Even environmental NGOs were surprised. The Sierra Club’s executive director later noted that they “were taken aback by the speed or suddenness with which the new forces exploded....We were severely disoriented” (Shabecoff, 1993).¹

Finally, there were the major precipitating events: the Cuyahoga River in Cleveland bursting into flames, the Interior Department’s proposal to flood the Grand Canyon, and, most significantly, the Santa Barbara oil spill in 1969. The rest, as they say, is history.

PRINCIPAL CHARACTERISTICS OF THE EARLY ENVIRONMENTAL AGENDA

The global-scale challenges that concern us today were almost totally absent from the discussion in the 1960s and 1970s. Only global population growth and protection of the ozone layer were included in the concerns of the time.

There was no major body of science – or group of scientists – pushing these issues forward. Some individual scientists played major roles – Paul Ehrlich, John Holden, Barry Commoner, and George Woodwell among them. But the issues were advanced mainly by events and by the realities of people’s everyday experiences.

Similarly, there was little need to try to define and promote an agenda. The agenda was defined by everyday incidents and the accumulation of actions in response. It was Lois Gibbs and her efforts at Love Canal, for example, that put the issue of abandoned hazardous waste sites on the agenda, not scientists or the government, and it happened after much of the early environmental legislation had been passed.

¹ Shabecoff’s *A Fierce Green Fire: The American Environmental Movement* contains an excellent survey of today’s environmental movement. See also the U.S. Council on Environmental Quality, *Environmental Quality: Tenth Annual Report*, 1979.

The Emergence of Global Issues

If this was the domestic scene, where were the global-scale issues of primary concern to us? Much as the domestic agenda of the 1970s was forming in the 1960s, the global change agenda was quietly taking shape in the 1970s. Throughout the 1970s, a steady stream of publications with a planetary perspective emerged, calling attention to global-scale concerns. Most were authored by scientists with the goal of taking their findings and those of other colleagues to a larger audience. A number of these reports were path-breaking, defining the global environmental agenda, but not all of them met with universal acclaim.

SEMINAL GLOBAL ENVIRONMENTAL REPORTS – 1970-1978²

1970	<i>Man's Impact on the Global Environment, Report of the Study of Critical Environmental Problems (a scientific group assembled at MIT)</i>
1971	<i>This Endangered Planet, Richard Falk</i>
1972	<i>Exploring New Ethics for Survival, Garrett Hardin</i>
1972	<i>Only One Earth, Barbara Ward and Rene Dubos</i>
1974	<i>The Limits to Growth, Donella Meadows et al.</i>
1978	<i>The Human Future Revisited, Harrison Brown</i>
1978	<i>The Twenty-Ninth Day, Lester Brown</i>

There were also numerous reports from scientific groups, especially panels and committees organized by the International Council of Scientific Unions, the U.S. National Academy of Sciences, the International Union for the Conservation of Nature (IUCN), and the United Nations Environment Programme (UNEP). These reports included the now famous 1974 study by Rowland and Molina, explaining the potential of CFCs to deplete the ozone layer. Their work remains the only environmental research to date to win the Nobel Prize. Also among these documents was the *Charney Report*, which was published by the U.S. National Academy of Sciences in 1979, and

² For complete citations, see reference section at the end of this chapter.

told us most of what we needed to know about climate change to take action. These reports and the steady stream of publications from Lester Brown and his team at the Worldwatch Institute collectively laid out the key issues.

Then, starting around 1980, a series of reports appeared seeking to pull together all of these issues into a coherent agenda for international action.

SEMINAL GLOBAL ENVIRONMENTAL REPORTS – 1980-1990³

1980	<i>World Conservation Strategy</i> , IUCN and UNEP
1980	<i>The Global 2000 Report to the President</i> , U.S. Council on Environmental Quality
1981	<i>Global Future: Time to Act</i> , U.S. Council on Environmental Quality
1982	<i>The World Environment: 1972-1982</i> , UNEP scientific team (Holdgate et al.)
1983	<i>Environmental Research and Management Priorities for the 1980s</i> , an international group of scientists organized by the Royal Swedish Academy of Sciences
1987	<i>Our Common Future</i> , World Commission on Environment and Development (the Brundtland Commission Report)

Predominantly scientific efforts were designed to bring global-scale challenges forcefully to the attention of governments. These syntheses collectively stressed ten principal environmental concerns:

- Loss of crop and grazing land due to desertification, erosion, conversion of land to non-farm uses, and other factors;
- Depletion of the world's tropical forests, leading to loss of forest resources, serious watershed damage (erosion, flooding, and siltation), and other adverse consequences;
- Mass extinction of species, principally from the global loss of wildlife habitat, and the associated loss of genetic resources;

³ For complete citations, see reference section at the end of this chapter.

- Rapid population growth, burgeoning Third World cities, and ecological refugees;
- Mismanagement and shortages of freshwater resources;
- Overfishing, habitat destruction, and pollution in the marine environment;
- Threats to human health from mismanagement of pesticides and persistent organic pollutants;
- Climate change due to the increase in greenhouse gases in the atmosphere;
- Acid rain and, more generally, the effects of a complex mix of air pollutants on fisheries, forests, and crops;
- Depletion of the stratospheric ozone layer by CFCs and other gases.

Clearly this was a new agenda, very different from the one that sparked the first Earth Day in 1970.

STAGE-SETTING DEVELOPMENTS

Political scientist Keith Caldwell has noted that two developments were needed before the international environmental movement could be born: environmental policy had to be legitimized at the national level, and the life-sustaining processes of the biosphere had to be perceived as a common concern of all peoples.

Caldwell sees the 1972 UN Conference on the Human Environment, the Stockholm Conference, as crucially important in both respects (Caldwell, 1996). Aply led by Maurice Strong, the Stockholm Conference forced many national governments to develop domestic environmental programs – including those in Europe, which were lagging behind the United States at that point, though not today – and it legitimized the biosphere as an object of national and international policy and collective management.

The Stockholm Conference also had a further major consequence – the creation of UNEP – which, as noted above, had a major role in the 1970s in framing the global agenda. The United Nations Environment Programme made estimates of deforestation and promoted strategies of action, convened the 1977 international conference on desertification, and promoted international agreements on the protection of migratory species and the World Climate Program of the World Meteorological Organization, all in the 1970s.

By the mid-1980s, the intellectual and policy leadership of the scientific community, the NGO community (groups such as IUCN, Worldwatch, and the World Resources Institute), and UNEP had paid off: a new and international environmental agenda had been established, one that governments would have to address collectively in some way to be credible. The press for action on these ten issues was too strong to ignore. Intellectuals in the scientific and NGO communities had excellent media access to keep the pressure on and keep the issues in the public eye. It would take another decade for this to happen fully, but by the mid-1990s each of the ten challenges had become the subject of a major international treaty, plan of action, or other initiative (although the freshwater and marine initiatives are arguably too weak to count).

What we see, then, is that the global agenda emerged and moved forward due primarily to a relatively small, international leadership community in science, government, the UN, and NGOs. They took available opportunities to put these issues forward – indeed they created such opportunities – so that governments had little choice but to respond. The game that many governments played was to react, but not forcefully.

DOMESTIC ACTION AND GLOBAL INDIFFERENCE

Against this background, it is instructive to compare the emergence of the global agenda with the emergence of the original, predominantly domestic agenda a decade earlier. The differences have proven consequential in eliciting corrective action from governments. Several contrasts deserve close attention.

- The issues on the domestic agenda were acute, immediate, and understandable to the public. Issues on the global agenda tend to be more chronic, more remote (at least from the North), technically complicated, and thus more difficult to understand and relate to. These differences have translated into major disparities in the degree of public awareness and support.
- The global agenda did not spring bottom-up from actual impacts on people; rather, it was forged top-down at the international level by science (often disputed science), by NGOs (often with circumscribed credibility), and by a peanut-sized UN agency tucked away in Nairobi.
- Unlike the domestic agenda, respect for national sovereignty requires agreement from many governments, often with different rankings of priorities. No government can be compelled to agree nor obligated without its consent. Thus treaties are hard to attain, and forceful treaties are a rare commodity.
- The domestic agenda was largely translated into legislation before corporate and other opposition was aroused. Action on the global agenda has been pursued in the context of an alerted, prepared, and powerful opposition where corporate interests are viewed as threatened.
- The world's most powerful country led in the fight for national-level action in the 1970s, but has largely failed to provide international leadership on the global agenda. Indeed, the United States has frequently been the principal hold-out on international environmental agreements.
- The villainy of the global agenda is more ambiguous. The blame for global-scale environmental problems cannot rest solely on the shoulder of big corporations when lifestyles in the developed world, mismanagement by governments of both the North and the South, and other factors are so clearly implicated. Increasingly, pollution comes not from something going wrong, but from normal life.

- Domestic agendas can be addressed primarily through regulatory means, but the global agenda requires major expenditures by governments, including development assistance to the poorer countries.

In light of these barriers to progress, it is a wonder that any has been made at all. How should one assess the progress of the last two decades – the decades during which we have been “on notice” that we faced extraordinary global environmental challenges? As noted earlier, there is a significant list of accomplishments that have followed in the wake of the emergence of the new global agenda. But as also noted, there have been severe constraints on seeking concerted international action. How has the play of these forces worked out in the real world?

ASSESSMENT AND PROSPECTS

Looking back, it cannot be said that the generations of the 1960s and 1970s did nothing in response to the global call for action. Progress has been made on some fronts, but not nearly enough. There are outstanding success stories, but rarely are they commensurate with the problem.

For the most part, we have analyzed, debated, discussed, and negotiated these issues endlessly. My generation is a generation, I fear, of great talkers, overly fond of conferences. But on action, we have fallen far short. As a result, the threatening global trends highlighted twenty years ago are still very much with us, ozone depletion being the notable exception.

But if we have not succeeded in reversing these trends, perhaps we have laid a good foundation for rapid action today. In fact, the results of twenty years of international environmental negotiations are disappointing. It is not that what has been agreed, for example, in the conventions on climate change, desertification, and biodiversity, is useless. But these treaties are mostly frameworks for action; they do not drive the changes that are needed. The same can be said for the extensive

international discussions on world forests, which have never reached the point of a treaty.

In general, international environmental law and its hundreds of treaties are plagued by vague agreements, minimal requirements, lax enforcement, and under-funded support. The weakness of most environmental treaties should not be a surprise, however; they were forged in negotiating processes that give maximum leverage to any country with an interest in protecting the status quo. Similarly, the international institutions created to address these issues – the UNEP and ECOSOC’s Commission on Sustainable Development – are among the weakest multilateral organizations.

If the first phase of global environmental governance has been marked more by failure than success, it is clearly time to launch a second phase that corrects past mistakes and moves from talk to action.

GLOBAL ENVIRONMENTAL GOVERNANCE SCENARIOS

The World Business Council for Sustainable Development (WBCSD) has sketched several broad paths in environmental governance:

- The “FROG” – First Raise Our Growth – scenario calls for the resolution of economic challenges first. FROG is a business-as-usual scenario, leading to huge environmental costs, even in the eyes of business leaders.
- “GEOPolity” is a success scenario in which sustainability is vigorously pursued. In this case, people turn to government to focus the market on environmental and social ends and rely heavily on intergovernmental institutions and treaties.
- The final scenario is “Jazz.” Jazz is not an acronym. It is a spirit, a world of unscripted initiatives, decentralized and improvisational. In this world, there is abundant information about business behavior; good conduct is enforced by public opinion and con-

sumer behavior. Governments facilitate; NGOs are very active; business sees strategic advantage in doing the right thing (WBCSD, 1997).

The initial international response to the global change agenda has been to try to move the world from FROG to GEOPolity. It isn't working. Getting serious requires new action on three mutually supportive fronts.

Revising GEOPolity

The current world of GEOPolity is designed to fail. It can be redesigned for success by insisting on new norm-setting procedures and new institutions, including a Global Environmental Organization (GEO). The case for an effective GEO is as strong as that for an effective World Trade Organization (WTO). The international community knows how to create plausible multilateral arrangements and has often done so in other, mostly economic, areas (Speth, 2002).

Taking Jazz to Scale

A second path to the future is to implement measures that can take Jazz to scale. Jazz is the most exciting arena for action today, with an outpouring of bottom-up, unscripted initiatives from business, NGOs, governments, and others:

- Seven large companies, including DuPont, Shell, BP, and Alcan, have agreed to reduce their CO₂ emissions fifteen percent below their 1990 levels by 2010. Indeed, Alcan is reported to be on track to reduce its emissions twenty-five percent below 1990 levels by 2010, and DuPont is on schedule to reduce emissions by sixty-five percent.
- Eleven major companies, including DuPont, GM, and IBM, have formed the Green Power Market Development Group and committed to develop markets for 1,000 megawatts of renewable energy over the next decade.
- Home Depot, Lowes, Andersen, and others have agreed to sell wood (to the degree that it is available) only from sustainably

managed forests certified by an independent group using rigorous criteria. Unilever, the largest processor of fish in the world, has agreed to do the same regarding fish products.

NGOs have played important roles in forging these corporate initiatives. They are the real maestros of Jazz. Local governments, universities, and other entities have also contributed. Over 500 local governments have now joined a campaign to reduce greenhouse gas emissions (Speth, 2002).

Attacking the Drivers of Deterioration

The third and most important path to sustainability is to address more directly the underlying drivers of environmental degradation (Speth, 1995).

- *Population.* Analyses suggest that an escalation of proven non-coercive approaches could lead to a leveling off of global population at eight and a half billion people in this century. This will not happen without adequate support for the United Nations' Cairo Plan of Action.
- *Poverty and underdevelopment.* Poverty is an important contributor to environmental deterioration: the poor often have little choice other than to lean too heavily on a declining resource base. But improved development prospects are also needed because the only world that works is one in which the aspirations of poor people and poor nations for fairness and justice are being realized. The views of developing countries in international negotiations on the environment are powerfully shaped by preoccupation with their own compelling economic and social challenges and distrust of the intentions and policies of industrialized countries. Sustained and sustainable development provides the only context in which there is enough confidence, trust, and hope to ground the difficult measures needed to realize environmental objectives.

Eliminating large-scale poverty is no longer an impossible dream. It could be accomplished in the lifetimes of today's young people. But, as with population, achieving these goals is limited by inadequate development assistance, in this case compounded by protectionist trade regimes and heavy debt burdens.

- *Technology.* The only way to reduce pollution and resource consumption while achieving expected economic growth is to bring about a wholesale transformation in the technologies that today dominate manufacturing, energy, transportation, and agriculture. Across a wide front, environmentally sophisticated technologies are either available or soon can be. From 1990 to 1998, when oil and natural gas use grew globally at a rate of two percent annually, and coal consumption did not grow at all, wind energy generation grew at an annual rate of twenty-two percent and photovoltaics at sixteen percent. Denmark now gets fifteen percent of its energy from wind; Japan last year installed 100 megawatts of photovoltaic power. Transformation of the energy sector must rank as the highest priority.
- *Market signals.* Needed changes in technology and consumption patterns will not happen unless there is a parallel revolution in pricing. The corrective most needed now is environmentally honest prices. Full cost pricing is thwarted today by the failure of governments to eliminate environmentally perverse subsidies (estimated globally at \$1.5 trillion per year) to ensure that external environmental costs are captured in market prices (Myers and Kent, 2001). We have no reason to expect major environmental improvement while these distortions persist.

CONCLUSION

There is no great mystery about *what* must be done. What does remain a great mystery is *how* we get on that path. Political systems alternate between incremental drift and rapid change – a pattern of punctuated equilibria. The global environment has been addressed incrementally, whereas we need major reform, a phase change, a tipping point, a rapid shift to a new equilibrium akin to the outpouring of U.S. domestic environmental concern in the 1960s and 1970s.

It is possible that we are seeing the birth of something like this shift in the anti-globalization protests, in the far-reaching and unprecedented initiatives being taken by some private corporations, in the growth of NGOs and their innovations, in scientists speaking up and speaking out, and in the outpouring of climate and other environmental initiatives by the religious community. We certainly must hope that something new and vital is afoot.

There are many hopeful signs that things are beginning to change for the better, but we are still at the early stages of the journey to sustainability. Meanwhile, the forward momentum of the drivers of environmental deterioration is great. As former Presidential Science Advisor Jack Gibbons is fond of saying, "If we don't change direction, we'll end up where we're headed!" And today we are moving rapidly to a swift, pervasive, and appalling deterioration of our environmental assets. There is still world enough and time, but the next few decades are crucial. The next doublings of the world economy cannot resemble those of the past.

REFERENCES

- Brown, Harrison. 1978. *The Human Future Revisited: The World Predicament and Possible Solutions*. New York: W. W. Norton.
- Brown, Lester. 1978. *The Twenty-Ninth Day: Accommodating Human Needs and Numbers to the Earth's Resources*. New York: W. W. Norton.
- Caldwell, Lynton K. 1996. *International Environmental Policy: From the Twentieth to the Twenty-First Century*. 3rd ed. Durham, NC: Duke University Press.
- Charney, J.G. 1979. *Carbon Dioxide and Climate: A Scientific Assessment*. Washington, D.C.: National Academy of Sciences.
- Falk, Richard. 1971. *This Endangered Planet*. New York: Random House.
- Hardin, Garrett. 1972. *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle*. New York: Viking Press.
- Holdgate, Martin W., Mohammed Kassas, and Gilbert F. White. 1982. *The World Environment 1972-1982*. Nairobi, Kenya: United Nations Environment Programme.
- IUCN. 1980. *World Conservation Strategy: Living Resource Conservation for Sustainable Development*. Gland, Switzerland: International Union for Conservation of Nature and Natural Resources.
- McNeill, J. R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century World*. New York: W. W. Norton.
- Meadows, Donella H. et al. 1974. *The Limits to Growth*. New York: Universe Books.
- Myers, Norman, and Jennifer Kent. 2001. *Perverse Subsidies*. Washington, D.C.: Island Press.
- Rowland, Sherwood, and Mario Molina. 1974. "Stratospheric Sink for Chlorofluoromethanes: Chlorine Catalysed Destruction of Ozone." *Nature* 249: 810-814.
- Salomon, Jean-Jacques. 1995. "The 'Uncertain Quest': Mobilising Science and Technology for Development." *Science and Public Policy* 22 (1): 9-18.

- Shabecoff, Philip. 1993. *A Fierce Green Fire: The American Environmental Movement*. New York: Hill & Wang.
- Speth, James Gustave. 1985. *Protecting our Environment: Toward a New Agenda*. Washington, D.C.: Center for National Policy.
- _____. 1988. "Environmental Pollution: A Long-Term Perspective." In *Earth '88: Changing Geographic Perspectives: Proceedings of the Centennial Symposium*, edited by Earth '88. Washington, D.C.: National Geographic Society.
- _____. 1995. "The Transition to a Sustainable Society." *Proceedings of the National Academy of Sciences* 89 (3): 870-872.
- _____. 2002. "Recycling Environmentalism." *Foreign Policy*, July/August 2002.
- Study of Critical Environmental Problems. 1970. *Man's Impact on the Global Environment: Assessment and Recommendations for Action*. Cambridge, MA: MIT Press.
- U.S. Council on Environmental Quality. 1979. *Environmental Quality: Tenth Annual Report*. Washington, D.C.: Government Printing Office.
- U.S. Council on Environmental Quality. 1980. *The Global 2000 Report to the President – Entering the Twenty-First Century*. Washington, D.C.: Council on Environmental Quality and United States Department of State.
- U.S. Council on Environmental Quality. 1981. *Global Future: Time to Act: Report to the President on Global Resources, Environment, and Population*. Washington, D.C.: Council on Environmental Quality and United States Department of State.
- UNEP. 2002. *Global Environment Outlook 3*. Nairobi, Kenya: United Nations Environment Programme. Available from <http://www.grid.unep.ch/geo/geo3/index.htm>
- Union of Concerned Scientists. 2001. "Warning to Humanity." *Renewable Resources Journal* 19 (2): 16-17.
- Vitousek, Peter M., Harold A. Mooney, Jane Lubchenco, and Jerry M. Melillo. 1997. "Human Domination of Earth's Ecosystems." *Science* 277 (5325): 494-499.

Ward, Barbara, and Rene Dubos. 1972. *Only One Earth: The Care and Maintenance of a Small Planet*. New York: W. W. Norton.

WBCSD. 1997. *Exploring Sustainable Development: Global Scenarios 2000-2005*. Geneva, Switzerland: World Business Council for Sustainable Development.

World Commission on Environment and Development. 1987. *Our Common Future*. New York: United Nations.

World Resources Institute. 2000. *World Resources 2000-2001: People and Ecosystems*. New York: Oxford University Press. Available from <http://www.wri.org/wri/wr2000/toc.html>

Worldwatch Institute, ed. 2001. *Vital Signs 2001: The Environmental Trends That Are Shaping Our Future, 2001 Edition*. New York: W. W. Norton.

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