

## Defense of Earth in a Changing World: An Introduction

A case may be made that the primary condition in any enduring civilization is a stable relationship between humans and their environment (e.g., by Jacques Ellul in *La Technique (The Technological Society 1964)*).<sup>1</sup> The international environmental movement may be understood in effect, if not explicitly in intent, as a quest for this relationship, even though its underlying and ultimate purpose is often obscured by concern over specific contemporary issues. The movement is an expression of fundamental change in human perceptions of life on earth. More rapidly than in most historical transitions, evidence of the change has appeared at every level of social organization—local, regional, national, and international. A development of great importance for the future has been emerging, but its significance is not widely understood. Sociologist Robert Nisbet has surmised “that when the history of the twentieth century is finally written, the single most important social movement of the period will be judged to be environmentalism.”<sup>2</sup>

To understand what has been happening, one needs to know the why and how of this development. Although not addressed in this book, the influence of transnational religions and popular ethics should not be overlooked, for perceptions of relationships between man and nature are fundamental to policies and behaviors relating to the environment. A new, ecological view of the role of humans on earth has been emerging, one that departs from the traditional perception of human dominion over nature and moves toward a more realistic appreciation of humanity’s interrelationship with the biosphere. This new view has led to action in which scientific knowledge, lessons of experience, and ethical judgments have been united in public policies and international agreements. Nevertheless, traditional views persist, although now partially offset by ecologically informed trends in ethics and theology.

This book is a comprehensive survey of the worldwide movement for protection of the human environment, with emphasis on intergovernmental agreements and institutional arrangements. Although the growing role of nongovernmental organizations in international policy is considered, less

attention has been given to the politics and ideology of the popular environmental movement. Emphasis is upon what has already become, or is well on the way to becoming, public policy. The book is essentially a history and chronology of international cooperation on environmental issues. It describes the expanding dimensions of international environmental policy and its status in the closing decade of the twentieth century.

To understand adequately the significance of international environmental policy in the present and the probable future, its origins and evolution need to be understood. The present can always be better understood against a background of the past.<sup>3</sup> The worldwide explosion of environmental concern that occurred in the 1970s and its recurrence in the late 1980s did not happen without causes and antecedents that influenced the substance and direction of international action. The book thus provides a record of historical events of continuing intellectual and historical significance. Two such events, the Stockholm Conference of 1972 and the Rio de Janeiro Conference of 1992, and their legacies form integrative themes throughout this book. The significance of these events will, I believe, grow with the passing of time; their character as turning points will increasingly be understood. But not all events of relevance or importance have been reported here—to have included all events of significance would have unduly lengthened the text and obscured with detail the main currents of action.

The far-reaching scope of this subject, examined in chronological depth, precludes detailed analytic treatment of most policy issues. For the latter purpose a series of volumes would be required. For many topics a large and growing analytic literature already exists.<sup>4</sup> This book undertakes to provide an overview of international environmental relations, with no more detail than necessary to record the processes through which various environmental policies emerged. The text accordingly is written at a relatively high level of generality, but some readers may seek more detailed information regarding specific environmental issues. For this reason the work is extensively documented; the notes supplementing the text provide guidance to sources of further information. Multiple sources have been provided for many citations, as not all readers will have access to the same publications. Earlier published work has also been cited where it has made a significant contribution to the historical record.

Several technical points require comment. In a book written and published in the United States it is logical that American preferences in spelling be followed. British spelling, used in United Nations documents, is followed when it appears in official titles and quoted passages. Thus, two different spellings of program/programme may appear in the same sentence. Measurements pose a similar problem. Metric measures have been used except where the cited data are in the English system. And to protect the reader from drowning in an alphabet soup of acronyms for international agencies and programs, full names will be repeated at intervals.

Regretfully, but bending to convention, the term “Third World” is frequently used throughout this volume in reference to so-called developing or less-developed countries. This nomenclature, and the equally flawed “North-South” dichotomy, does not adequately identify the differences that distinguish the less industrialized from the more industrialized nations. Nor does it reflect the great diversities among the “Third World” nations that in some cases are more significant than their commonalities. But to propose and defend a more appropriate terminology would further complicate and extend an already complex and extended text. Instead, minimal explanation of these word usages is provided at those places in the discussion where clarification might help the reader. The terms human, humankind, humanity, people, and man are used interchangeably throughout the text. They are generic terms for the human species used alternatively for reasons of style, but always with fidelity to quoted passages.

The author does not bend the contents of the book to fit a theme, yet a unifying concept emerges from the historical evidence. It is the transformation of institutions through social learning in response to the findings of science and the perceived impacts of environmental change. The environmental movement exemplifies learning by large numbers of people from experience made explicit and understandable through science. The movement belongs to a larger transformation in human social thought, which may be likened to a second Copernican revolution. The first revolution removed the earth from the center of the universe; the second removes humanity from the center of the biosphere. The human species is indeed the dominant resident-shaper of environmental change, but only people bound to prescientific theologies (and not all of them) believe that the earth and its biosphere were created for man’s exclusive benefit.

Attitudes are changing, but there is nonetheless a lag between the new perception and the assumptions, practices, and institutional policies expressing traditional views of relationships between humanity and the rest of nature. Thus, the environmental movement is transitional between those perceptions and policies that have been widely prevalent in human affairs, and those new beliefs and commitments that are exemplified by the reports, declarations, laws, treaties, and programs described in this volume. While the transition has moved rapidly relative to historical change, many years may yet pass before its implications are fully realized.

Meanwhile, the goals of environmental protection are pursued in a world still unhappily characterized by mutually antagonistic blocs among and within nations. Underlying the political differences are ethnic and ideological conflicts, which at times have threatened to wreck international cooperation of any kind. There are students of international affairs who argue that a political unification of the world is necessary to match its ultimate biospheric unity and to contain the parochial tendencies of humankind that lead to interna-

tional conflict. But the prospect of a world of politically compatible nations in the foreseeable future seems remote, and the prospect of a unified world social order more distant yet.

This negative assessment is offset to some extent by human adaptability. Nations and people cooperate when convinced that their interests will be served by cooperation. Social learning leading toward an integrated view of humans in the biosphere rationalizes international cooperation on numerous environmental issues, regardless of differences in other respects. Many environmental issues threatening the biosphere today cannot safely be set aside until political, social, and economic antagonisms among nations are resolved. But people who collectively dislike one another can work together when faced with a common threat. This is the politics of antagonistic cooperation—perhaps the only strategy realistically available to defend the earth against human egoism, aggression, and lack of foresight.

Yet, as the transition between the twentieth and the twenty-first centuries occurs, a more cautiously hopeful prospect appears possible. At the close of the 1980s major political reorientations occurred in many countries. An active environmental movement appeared to be growing in Brazil—a country that led Third World resistance to international environmental policies at the 1972 United Nations Conference in Stockholm, yet hosted the 1992 United Nations Conference on Environment and Development. East European states and groups that were mute within the former Soviet Union were demanding environmental as well as political and economic reforms. In July 1989 the political chiefs of seven principal industrial democracies declared their commitment to international environmental cooperation. Issues such as global climate change, disintegration of stratospheric ozone, and long-range transboundary transport of pollutants (including radioactive fallout) appeared to be prompting—at least in principle—the willingness of governments to cooperate for their mutual protection.

A structure of international environmental cooperation has been emerging and developing that may provide a bridge to more inclusive international relationships in the future. Nations that have never worked together before are doing so now in a variety of cooperative efforts, such as the UNEP Oceans and Coastal Areas Programme and the supranational policymaking of the European Union. The North American Free Trade Agreement has been supplemented by a lateral environmental cooperation commission. Common purpose precedes common action, and the broadening understanding of the relationship of environment to economic and social issues may lead to expanded perceptions of common interest. And conversely, international collaboration on common economic problems has led, as in Europe and among the Southeast Asian (ASEAN) governments, to cooperation on environmental matters. Thus the tenor of this book, while not optimistic, does offer some

hope. It is hope based upon the demonstrated ability of humans to learn and to apply their learning in practical ways even under conditions of stress and conflict.

Inevitably affected by the dynamics of science, environmental policy should be understood as a developing process. A report confined to the state of environmental policy at a given time has appropriate uses, but it cannot reflect this dynamic, and thus rapidly becomes “dated.” However, to understand the significance of environmental policy today, it is necessary to know the circumstances that led to the present situation. Scientists studying soil deterioration or the changing chemical balance in the atmosphere need to know the historical progression of biogeochemical interactions that explain what has happened and why—thus enabling them to more reliably project future probabilities and alternative responses. Similarly the rationale underlying the way in which environmental issues and problems are dealt with in international affairs is best understood in historical (i.e., evolutionary) terms. This book is written so that it may be of continuing value as a record of the rise and development of an international environmental movement. Its emphasis, on emergent processes rather than upon contemporaneous events, is meant to give it continuing utility even when future events displace current arrangements.

For this reason the following chapters will frequently describe the chronological sequence of emerging issues and, so far as feasible, be specific with respect to dates and critical events. Not only is the timing of a development often helpful in explaining its outcome, but dates at specific points of reference are helpful to readers who may wish to learn more about a particular incident. A chronology of significant events is provided in Appendix C.

The scope of the subject of this book is so comprehensive that illustrations of issues and problems must be carefully limited and selective. It is impossible to tell the reader everything that is important to the subject, although opinions and examples have been drawn from nearly every nation. The text is extensively documented to facilitate follow-up, but the large amount of relevant literature and the space limitations of a single volume, preclude (with rare exceptions) citations to publications in languages other than English. However, a high percentage of the world’s literature on environmental policy and science has been published in English. This includes periodicals published by the United Nations agencies and nongovernmental international organizations, which are often the best sources of current information in the field.

### **What Are the Critical Issues?**

Environmental policy tends to be focused, at least superficially, on specific and concrete emergencies or events. Environmental issues are numerous and disparate; but public attention is drawn to immediate, comprehensible con-

cerns that are more readily publicized than the larger, more complex developments of which they are manifestations. It is easier to attract public attention to the effects of acid rain, the plight of fur seals, or pollution from pesticides than to the more complex, yet no less fundamental problems of biogeochemical cycles or species-habitat relationships.

Critical environmental issues may therefore be evaluated differently in science and in public affairs. With the growth of scientific understanding of processes and relationships in the environment, public policymakers are beginning to appreciate the larger dimensions of environmental problems. It is also more convenient for governments and international organizations to deal by statute or treaty with a few larger issues than with many lesser ones. It is simpler to have a general treaty for the protection of marine mammals (even with subsections for particular species) than to negotiate separate treaties for whales, porpoises, walruses, and manatees. A treaty to protect all migratory birds is more easily administered than treaties for each species.

Critical issues as categorized by science do not always correspond to the perceptions and priorities prevailing in governments and international agencies. An issue becomes prospectively critical to a government if it becomes sufficiently critical to its political constituency. Moreover, the way in which an environmental issue or problem arises in public affairs and the way in which the public perceives it may differ significantly from the way the same set of circumstances would be understood from the viewpoint of the relevant sciences. For this reason a book like the United Nations Environment Programme (UNEP) report, *The World Environment 1972–1982*, while appropriately organized in a large part under categories into which scientists divide their study of environmental problems (e.g., atmosphere, terrestrial biota, population), also reflects the concerns of UNEP's governmental constituents (e.g., health, settlements, industry, and tourism).

This book is organized upon a different rationale. The emergence of international environmental policy as well as its implementing arrangements, rather than the state of the environment, form its organizing principle. National legislation and international treaty making seldom proceed along lines of systematic scientific relatedness. Yet scientific aspects of critical environmental issues are built into the structure of the book because perceptions derived from science are gaining in recognition and influence upon policy.

There has been a growth of understanding that the goals of policy cannot be achieved solely by attack upon apparent and immediate environmental problems, for they are often manifestations of deeper environmental disorders requiring systematic analysis and explication that the sciences may (or may not) provide. And because the chapters to follow are organized primarily around the emergence of popular and political perceptions of environmental problems, a summary of critical issues as defined through science will be

useful. Regardless of popular understanding, these issues are fundamental to the course of international environmental policy development.

There is no universally accepted way to categorize critical environmental issues; many are interactive or overlapping. The issues are seldom mutually exclusive; each one embodies some aspect of others. Classifications adopted by various organizations may reflect particular intentions or responsibilities—as exemplified by the topical categories of the UNEP Earthwatch program. There is less argument about which issues are environmentally significant than about which among them are the more critical. Every categorization of environmental issues is to some extent arbitrary in the sense that other schema may be equally valid—although not necessarily contradictory. The following enumeration of critical issues lists twelve broad categories of environmental significance. The length of time before disastrous or irreversible effects occur is a principal criterion for criticality.

**Critical at Present:** Immediate action necessary if the threat is to be countered:

1. Genetic loss (threatened extinction of presently endangered species).
2. Ecosystem disruption (massive loss of habitat, genetic material, quality of life, and regenerative capabilities—marine as well as terrestrial).
3. Overpopulation by humans (a critical factor in most environmental issues and requiring early corrective action to counter already escalating ecological and economic impoverishment and social conflict—almost every environmental problem and the prevalence of poverty could be reduced by stabilization of population).
4. Deforestation and overgrazing (many of the above effects, as well as decimation of forest-dwelling peoples, soil deterioration including erosion, laterization, flooding, siltation, and possible reduction of atmospheric oxygen).
5. Contamination of the environment—air, water, soil, and biota (by industrial toxicants including radioactive materials, photochemical reactions, e.g., smog, and by particulates, e.g., dust).
6. Degrading and depletion of fresh water (caused by many of the above threats, eutrophication or acidification of lakes and streams, exhaustion or contamination of groundwater and aquifers, and destruction of wetlands).

**Becoming Critical:** Prompt response needed, but a lead time of some years allows solutions to be found before disaster occurs. A systematic search for solutions should begin now:

7. Unsustainable assumptions and trends that could lead to ecological and economic collapse. Persistence of ideologies inconsistent with life on earth (e.g., ever-expanding consumption and material growth).

8. Deterioration and erosion of top soil (especially disastrous in tropical countries and closely related to overpopulation, deforestation, and desertification).
9. Climate change and deterioration of atmospheric quality, sea-level rise caused by global warming, disruption of stratospheric ozone layer, precipitation of acidic and other contaminants, and impairment of atmospheric clarity by industrial particulates and dust.
10. Sources and uses of energy (progressive reduction in existing sources, and dangers from their environmental effects make this issue ultimately critical; no early adequate solutions are apparent).
11. Disruption of biogeochemical cycles (relates to all of the above; a combination of destructive trends could—at least in theory—break the linkages that permit regenerative capabilities of the biosphere to function, resulting in massive extinction of life on earth).
12. Maintenance of the built environment and loss of cultural heritage in arts and architecture (the large environment-shaping public works of modern society, e.g., dams, canals, highways, nuclear reactors, and other large structures, entail costs projected indefinitely into the future, and regardless of their continuing utility—which may not always be assured—encumber the future allocation of societies' resources).

Except as offset by conservation practices or technological innovation, all of the foregoing issues become more critical with expanding human populations. Some might also be worsened temporarily by a sudden collapse of world populations. Restoration of damaged environments would become difficult if numbers declined to the minimum required for subsistence. The maintenance of a modern physical infrastructure might prove an impossible burden for a greatly reduced population. The concept of optimal population deserves serious consideration. The present danger is clearly one of excessive population pressure upon a finite environment. The populous world as presently organized is now being increasingly, but perhaps too slowly, perceived as unsustainable. The questions of whether or how to achieve a stable or steady ecological-economic state will certainly pose a major policy problem in the twenty-first century.

All of the processes, developments, and conditions that comprise these issues affect relationships among nations. Some problems affect all nations, whereas others may have largely regional significance (at least in their primary effects). But the ramifications of every major issue have worldwide implications. In this sense they may be called global, but there are few ways to act upon them globally. They must be attacked at their origins. Except for the international commons of the high seas, outer space, and the unique case of Antarctica, the issues arise within national frontiers. However, among their other inequalities, nations are unequally able or willing to manage their af-

fairs so as to avoid the emergence of critical environmental problems. Nor are there many ways under the present disposition of national power and politics that nations may peacefully coerce one another into environmentally prudent policies. Embargoes are uncertain possibilities.

The basic assumption upon which the foregoing statement of concepts and approaches rests is that the environmental movement, as it spreads worldwide, is a manifestation of a major historical change of state, or discontinuity. Eric Ashby has described the so-called environmental crisis of our time as a climacteric.<sup>5</sup> It marks the end of that half-millennium of exuberant, exploitive expansion of (chiefly) Western society that we have called modern times. Symbolic boundary markers might be 1492 to 1992. People well informed, and even many poorly informed, are beginning to understand that the course pursued by modern society during the past five hundred years can no longer be continued indefinitely. In more than a poetic sense, the threats to future life exemplified by global climate change, ozone depletion, toxic contamination, and environmentally catalyzed disease represent a backlash of nature against the improvident optimism born of human ingenuity. There may remain great opportunities for human achievement, but the price of their realization includes an informed restraint upon the human uses of the earth. The ultimate goal of environmental policy is a sustainable relationship between humankind and the life-supporting systems of the earth.

At the close of the twentieth century two collateral movements, notably in the United States, forecast what may become dividing issues in the twenty-first century. They are antienvironmentalism, based chiefly on the perceived necessity for perpetual growth and on an individualistic and possessive view of property rights, and—in contrast—a broader movement for an environmentally and economically sustainable future. The property rights movement has been characteristically American and parochial and would seem to have no great significance for international environmental policy other than a deterrence to cooperation by the United States on certain international issues (e.g., biological diversity). The movement for sustainable development, however, could strengthen international environmental policy and action by integrating ecological and economic theory in the concept of natural economics.

The sustainability concept is not only realistic in its economic perspective but also implies a moral and prudential commitment. When most effectively articulated it could resolve the dichotomy between so-called realistic and idealistic views of humanity's relationship to the earth and to future generations of life on earth. For this to happen the concept of sustainable development will need clarification and its utility will need to be tested in practical application. Even in its present ambiguous form the concept does have utility as a goal and a framework for assessing and perhaps redefining the concept of development.

The encompassing environmental policy question of today is, what hap-

pens now? How will the broad range of commitments to protect the environment be put into effect, when, and by whom? How will the costs of environmental efforts be allocated? What trade-offs will be necessary to assure that important environmental needs are met with regard to future generations as well as to those now living? Most important of all, however, is a moral question: By what principles of ethics or moral conduct is human behavior to be judged in relation to the environment?

Twenty-five years ago, in response to an invitation from the Scientists' Institute for Public Information, I described the "environmental crisis" as more profoundly "a crisis of will and rationality—of intelligence and moral character." This "crisis" is not in the environment, which is ever-changing, but in human behavior as it affects the environment. It comes down to a choice among values. And as Ernest Becker put it, "[T]he fundamental question of values in any culture can be phrased in simple terms—what kind of control over what kind of environment?"<sup>6</sup>

I believe that it is hardly possible to overemphasize the need for humanity to find, through its most basic assumptions about life and nature, a truly sustainable relationship with the earth. I therefore conclude this introduction by repeating a statement I made in the UNEP publication for the United Nations Environmental Sabbath/Earth Rest Day, 1–3 June 1990:

The environmental crisis is an outward manifestation of a crisis of mind and spirit. There could be no greater misconception of its meaning than to believe it to be concerned only with endangered wildlife, human-made ugliness, and pollution. These are part of it, but more importantly, the crisis is concerned with the kind of creatures we are and what our species must become in order to survive.<sup>7</sup>