America's National Interests in Promoting a Transition to Sustainability

William C. Clark

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America's National Interests in Promoting a Transition to Sustainability

Among the greatest challenges facing humanity at the dawn of the 21st century is learning how to better meet human needs while restoring and nurturing the planet's life support systems. Advances in individual sectors of human development, such as food, health, water, and energy, are surely important, as is progress in addressing individual environmental problems, such as the loss of biodiversity and climate warming. The proposition advanced here is that these individual problems are more accurately and helpfully viewed as multiple dimensions of an increasingly interdependent and global relationship between society and environment—a relationship that has been captured in the phrase “sustainable development.” It is not the individual problems alone but rather their interactions that pose the greatest threats and

by William C. Clark
opportunities for the 21st century. If humanity is to meet these challenges and move forward in a transition toward sustainability, it will need to craft a vision of the future that encompasses the multiple interactions among the multiple dimensions of development and environment as well as a strategy for action that addresses those interactions.

What ought to be the role of the United States in promoting a sustainability transition? How this question is answered matters because of the material impact the United States has on sustainability concerns and because of what many presume to be the necessity of its leadership in multiple arenas of international affairs. One set of answers will come from those guided by internationalist and multilateralist values, another from those focused on the United States’s moral obligations to other peoples, a third from those primarily concerned with conserving nature, and so on. All of these views are defensible, and a great deal is to be gained by pluralist strategies that allow each its running room. But a plausible reading of US. history suggests that the United States can be expected to provide a high level of unwavering commitment to only a few issues that are consensually agreed upon to be central to America’s national interests. Does the United States in fact have compelling national interests in leading the international effort to craft a vision and strategy for a transition toward sustainability? Answering this question in a way that could help national policy development will require a more structured, rigorous, and hierarchical conceptualization of “national interests” than has been evident in this country’s debates about environment and development. This memorandum proposes such a framework and uses it to identify a hierarchy of national interests and related action priorities that could help to guide the United States’s engagement in a global transition toward sustainability.

**Legacy of the Last Two Generations**

Many of the challenges facing human development at the beginning of the 21st century are well known. A spectacularly successful 50 years has produced, for the most fortunate, a quality of life unprecedented in human history. For another 3 billion people, it has brought about marked improvements in living standards, including significant increases in life expectancy, infant survival, literacy, and access to safe drinking water. However, this progress notwithstanding, more than 20 percent of today’s human population still lives in poverty, 15 percent experiences persistent hunger, and at least 10 percent is homeless. Moreover, the gap between the very rich and very poor is widening, with whole regions clearly losing ground.1

Through both its successes and failures, modern human development has transformed the planet on which it has taken place—and on which it depends for its future.2 Human activities have doubled the planet’s rate of nitrogen fixation, tripled the rate of invasion by exotic organisms, increased sediment loads in rivers fivefold, and vastly increased natural rates of metal mobilization and species extinctions. Today’s human population takes first bite at more than 40 percent of the world’s terrestrial plant production and first sip of more than 50 percent of its freshwater runoff. People have fully or over-exploited more than 60 percent of the planet’s marine fish species, markedly changed the atmosphere’s composition, and introduced more than 70,000 synthetic chemicals—including surprise-laden ones like DDT (dichlorodiphenyltrichloroethylene) and chlorofluorocarbons (CFCs)—to a planet that had never before experienced their like.3

**Challenges of the Next Two Generations**

Looking ahead, there is a growing consensus that the next 50 years will see a world in which people “are more crowded, more consuming, more connected and, in many parts, more diverse than at any time in human history.”4 The planetary environment in which those people live will be stressed as never before: almost certainly warmer, more polluted, and less species-rich than ever in human history. Many of these trends have had a good deal of discussion of late, under headings ranging from “globalization” to “climate change.” Less remarked upon is the fundamental transition under way in the growth of human populations: Rates of increase are now falling almost everywhere in the world, with the result that the number of people on the planet is expected to level off at 10 or 11 billion by the end of the 21st century, reaching around 9 billion—still half again as many as today’s count—by 2050.
population, if brought to fruition, could fundamentally transform the challenges of environmentally sustainable human development and also how people think about them. It could allow people to focus, for the first time in modern history, on questions of sustaining increases in the quality, not just the quantity, of human life. Can the transition to a stabilizing human population also be a transition to sustainability in which the people living on Earth over the next half-century meet their needs while nurturing and restoring the planet’s life support systems? A recent report from the National Research Council (NRC) of the U.S. National Academy of Sciences reviewed challenges to a sustainability transition arising from six major development areas initially identified and explored in the 1987 report of the United Nations’s World Commission on Environment and Development (the Brundtland Commission). Its findings are summarized below.

**Population and settlement.** Trends in human population and settlement are leading people toward a world of aging populations, growing more slowly than in the past but with additional growth concentrated as never before in urban areas of the developing world. The space, resources, and waste disposal necessary to provide for the needs of another 4 billion people over the next 50 years seem unlikely to be available without significantly degrading the Earth’s life support systems unless quite different patterns of consumption and production can be developed. Because virtually all of this increase will be accommodated in urban areas, the challenges of providing municipal air and water quality, sanitation, and garbage disposal will be particularly acute. For mature, slowly growing, and wealthy urban areas, we almost know how to combine the technology, financing, and administration necessary to provide such waste services. For the young, rapidly growing, and generally underfinanced urban infrastructures that will arise to accommodate 4 billion more city dwellers over the next 50 years, we do not—at least not in ways that do not exact a steep price in human well-being and environmental quality.

**Agriculture and food security.** Developing secure supplies of food for a world population that, during the next 50 years, will grow to 50 percent again as large as today’s is a daunting challenge. World demand for food could easily double during this period, depending on the diets of our children and grandchildren. Unfortunately, many of the sources of the last half-century’s phenomenal improvements in agricultural production now appear to be nearing their limits. Moreover, investments are declining in the global agricultural research system that has been responsible for much of the progress made during the past several decades. Substantial private sector investment will almost certainly be necessary to reinvigorate this research system. But as the recent biotechnology debacles show, such investment is a risky business. Learning how to make private investment in agriculture attractive and effective over the long haul—particularly with regard to those aspects of the system most important for enhancing food security and reducing hunger—remains a daunting task for the coming decades.

**Energy and materials.** During the next two generations, global demand for goods and services is likely to increase two- to fourfold. The material and energy use associated with meeting this demand seems less likely than they once did to be constrained by absolute resource shortages. Rather, it is the planet’s capacity for waste disposal that now seems most likely to be in short supply. The fundamental challenge today and in the future therefore remains the same as that identified by the Brundtland Commission in the 1980s: to produce more with less. In practice, efforts to meet this challenge have moved among three related but distinct paths: technological substitution to reduce the use of particularly hazardous substances, efficiency improvements in the conversion of energy and materials into end uses, and the reduction of “leakages” in the overall material system through recycling and reuse. In all of these areas, substantial progress is being made. But the absolute quantities of materials released to the environment as a result of human activities continue to grow and already exceed flows associated with natural processes across a wide range of substances. In many cases, these human flows have degraded the performance of crucial life support systems at continental scales and beyond. The potential for future damage is significant, growing, and spreading from the long-industrialized to the newly industrializing portions of the world.

**Living resources.** Humans need the other living resources of the planet not only for food and fiber, but also for a host of other services ranging from watershed protection and climate maintenance to pollination and the control of disease organisms. Societies have long been aware that overharvesting living resources can undermine subsequent prospects for human development. However, it has become increasingly clear that direct harvest is only one of the pressures placed by humans on living resources, with land-use change and habitat destruction often causing even greater damage to the living systems on which our fate so closely depends. Pressures on living resources are increasing across the board, driven by the persistence of a frontier mentality in an increasingly crowded world, excessive harvest demands, heavy-handed recreational activities, and significant perturbations to the chemical and radiation environments of the planet. Significant progress has been made during the last two generations in the protection of a few high-profile vertebrates and a number of especially attractive or unique places. But the ultimate ineffectiveness of protection measures targeted at single links or locations in the complex web of life is becoming ever clearer. And the challenge of conserving whole ecosystems has almost nowhere been met. Indeed, a consensus is only beginning to develop on relevant measures by which the success or failure of such conservation efforts could be evaluated.

**System effects.** Systematic efforts to integrate across all of these development
trends and needs for particular parts of the world yield an unsurprising set of environmental threats. Nearly everywhere, problems such as urban air pollution, ground-water contamination, and forest degradation are matters of serious concern. Global issues such as climate change and stratospheric ozone depletion have received lots of attention in some of the more developed and more vulnerable countries but are accorded only secondary attention elsewhere. Reciprocally, disease epidemics, flood, drought, and forest depletion have been the primary focus of attention in many poorer parts of the world. In setting environmental priorities for sustainable development, it is therefore crucial to recognize that there are few universal concerns: Location matters.

During the last several decades, most research and policy addressing environment and development issues have focused on one or another of the problems or sectoral activities noted above. Both understanding and management have benefited substantially from these focused approaches. However, it is becoming increasingly clear that the interactions among problems and activities are significant and that the interdependence of environment and development runs deep. The National Research Council concluded most of the individual environmental problems that have occupied most of the world’s attention to date are unlikely in themselves to prevent substantial progress in a transition toward sustainability over the next two generations. Over longer time periods, unmitigated development of even these individual problems could certainly pose serious threats to people and the planet’s life support systems. Even more troubling in the medium term that concerns us here, however, are the environmental threats arising from multiple, cumulative, and interactive stresses and driven by a variety of human activities.

Work in Germany has suggested that a dozen or so kinds of interactions characterize many of the most destructive collisions between environment and development. These interactions have been dubbed “degradation syndromes” and have been characterized in three broad groupings of “utilization syndromes” (e.g., the Sahel region in North Central Africa), “development syndromes” (e.g., green revolution “pesticide treadmills”), and “sink syndromes” (e.g., Black Triangle in Eastern Europe or Love Canal in New York). However named, they constitute an emerging class of globally embedded but place-based environmental threats that need at least as much attention in managing a transition toward sustainability as do the single-factor problems that have received most of the attention to date.

NRC analysis suggests that the trends described above “could significantly undermine the prospects for sustainability. If they do persist, many human needs will not be met, life support systems will be dangerously degraded, and the numbers of hungry and poor will increase.” The study nonetheless concluded a successful transition toward sustainability is possible over the next two generations. This transition could be achieved without miraculous technologies or drastic transformations of human societies. What will be required, however, are significant advances in basic knowledge, in the social capacity and technological capabilities to utilize it, and in the political will to turn this knowledge and know-how into action.

America’s National Interests in Promoting a Sustainability Transition

America’s national interests in promoting such a transition toward sustainability, even in places beyond U.S. borders, is obvious to some. The planet to be sustained is, after all, the only one we have. To others, however, support is of the “yes, but . . . ” variety, with the size of the U.S. foreign aid budget suggesting that the “but” is very large indeed. Another response is that U.S. interests lie in whatever interests U.S. citizens. This has the benefit of being more politically viable than the “everywhere” response because it targets attention on a few issues that have broad public support. The problem is that American interest in specific environmental issues has been episodic, flighty, and not particularly well correlated with objective risks posed to the nation, much less the world. Moreover, government programs have dutifully and democratically tracked this fickle public attention, even when this has led to demonstrably inferior policy in both the domestic and international arenas. Such flightiness would be problematic enough in any issue area. For dealing with the long-term scale problems described earlier, it is nothing short of fatal.

These examples suggest that useful conceptualizations of “national interests” must be more structured, rigorous, and hierarchical than those in general use. One framework that meets these criteria was developed by the independent, bipartisan Commission on America’s National Interests in the mid-1990s and revised at the turn of the century. This framework distinguishes interests that are vital or strictly necessary to safeguarding and enhancing the well-being of Americans from other interests that are extremely important, merely important, and secondary. It further distinguishes interests from threats to those interests and from policies to advance them. However, it recognizes that people in the United States have repeatedly demonstrated deeply held preferences for the means by which national goals are pursued. These include high—if sometimes conflicting—values placed upon sovereignty and stability in the international arena, upon diffusion of domestic governmental power, and upon openness of governance and markets to outside parties. These fundamental preferences concerning means lead to the identification of instrumental national interests as well as substantive ones.

Applying this hybrid framework to the analysis of the threats and opportunities around the world presented earlier leads to the following ordered list of America’s national interests in promoting sustainable development:

Vital interests, or (in the words of the commission) “conditions that are strictly necessary to safeguard and enhance...
Americans’ survival and well-being in a free and secure nation”:

- Substantively, to prevent the catastrophic collapse of major global life support systems (i.e., those that are responsible for sequestering toxic materials, cycling and regeneration of nutrients, regulating climate and sea level, screening extraterrestrial radiation, and controlling disease and pest organisms).
- Instrumentally, to develop credible U.S. leadership in dealing with other states on sustainability issues and to build global institutions essential for monitoring, understanding, and protecting Earth’s life-support systems.

Extremely important interests, or “conditions that, if compromised, would severely prejudice but not strictly imperil the ability of the U.S. government to safeguard and enhance the well-being of Americans in a free and secure nation”:

- Substantively, to prevent and, if possible, at reasonable costs, end regional environment/development degradation spirals that could cause major conflicts in strategically important geographic regions (perhaps including North America, East Asia, Russia, Europe, and the Mid-East) or result in massive, uncontrolled immigration across U.S. borders.
- Instrumentally, to promote strong strategic partnerships for sustainable development with such regions.

Important interests, or “conditions that, if compromised, would have major negative consequences for the ability of the U.S. government to safeguard and enhance the well-being of Americans in a free and secure nation”:

- Substantively, to prevent and, if possible, at low costs, end regional environment/development degradation spirals that have the potential to cause major conflicts in strategically less significant geographic regions;
- Instrumentally, to maintain a strong United Nations and other global, regional, and functional mechanisms for international cooperation.
- Secondary interests, or “desirable conditions that . . . have little direct impact on the ability of the U.S. government to safeguard and enhance the well-being of Americans in a free and secure nation”:
  - Substantively, to protect other aspects of environmental quality.
  - Instrumentally, to promote capacity for environmental protection generally.

Other memos submitted to this forum provide an assessment of environmental threats to this nation’s basic interests arising through the quest for human development. More broadly, the World Bank and United Nations Environment Programme have recently completed global surveys of threats but have not matched those surveys to a template of interests. A new international Millennium Ecosystem Assessment is in the works and will join a number of ongoing specialized international assessments, such as that of the Intergovernmental Panel on Climate Change. Several countries have recently completed their own analyses, including that of the U.S. National Academy of Sciences.

**Threats to America’s National Interests**

The appropriateness of these particular allocations of U.S. sustainability interests along the Commission on America’s National Interests’s hierarchy could and should be debated. But independent of their allocation arises the question of threat assessment: How endangered are America’s national interests in environment and development? How well is the United States placed to deal with those threats?

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**Threats to America’s vital interests**

Among all of the problems addressed in these assessments, the only threats that seem to have posed immediate challenges to vital national interests as defined above are fallout from nuclear weapons testing and depletion of the stratospheric ozone layer. In both cases, however, reasonably timely international action seems to have averted disaster—at least for the moment. Surprises may still be in the works. But radioactive fallout from human activities peaked in the early 1960s and is now down to below-natural background levels. And the release of ozone-depleting chemicals has been sufficiently reduced so that stratospheric concentrations have peaked and are expected to
return to pre-1980 levels by mid-century.\textsuperscript{18} It is worthwhile to note that although the United States shares major responsibility for both of these threats, in both cases the country’s leadership was an essential component of the multilateral efforts that brought the threats under control.

A threat to the Earth’s life support systems and humans’ vital interests may yet be posed by either climate change or through transformation of the global nitrogen cycle.\textsuperscript{19} But these potential threats, whatever else they do, appear unlikely in and of themselves to significantly undermine “the well-being of Americans in a free and secure nation” within the next several decades.\textsuperscript{20} And with luck and timely action, they need never undermine these vital national interests at all. Time, however, is precisely what future threats to the Earth’s life support systems may not grant. It is sobering to remember that the threat of ozone depletion—especially the potential for run-away depletion suggested by the discovery of the Antarctic ozone hole—emerged suddenly, as a surprise.

Scientists’ incomplete but indicative understanding of the Earth system gives us every reason to believe that comparable surprises await us in the future.\textsuperscript{21} The only defense against these is a general reduction in the pressures the world is placing on its life support systems and a general increase in our social ability to detect and respond to the surprises that will inevitably emerge.

**Threats to America’s important interests.** Related to the pressures described above are several threats that could affect important U.S. interests in preventing cross-border transfer of pollutants or organisms that could directly affect the health, economy, or ecosystems of the United States.\textsuperscript{22} Most of this nation’s attention to such issues to date has focused on the continental-scale transport of acidifying substances originating in Canada or Mexico. These, however, are addressed through bilateral and multilateral agreements (along with the generally greater flows of acidifying substances from the United States to neighboring countries). The threats they pose to national interests seem unlikely to increase substantially in the future. More alarming is the increasing evidence that tropospheric ozone and other pollutants formed from fossil fuel combustion in Asia are affecting background levels of ozone in the United States.\textsuperscript{23} Given likely growth of Asian emissions during the next decades, the ozone emitted there has a sufficient impact in the United States to offset its domestic reductions, cause damage to health and crops, and make domestic control efforts much more costly. Similar concerns arise over a variety of persistent organic pollutants that, though regulated because of their health risks in the United States, are or will soon be produced in sufficient quantities elsewhere to pose an increasing threat to the health of U.S. citizens.\textsuperscript{24}

The United States also has important interests relating to the movement of biological organisms across its national borders. The threats to U.S. interests arising through such movements are clearly increasing.\textsuperscript{25} The most dramatic globalization in biotic linkages has involved the occasional movement (usually aided by human transportation processes) of pest or disease organisms or elimination of native species are often the result.\textsuperscript{26} Long-range invasions by other “exotic” organisms are also significant, with perhaps 20 percent of some continental floras now represented by relatively recent immigrants.\textsuperscript{27} The impacts of such long-distance invasions are extensive, representing a major cause of land-use transformation and species extinction.\textsuperscript{28} Data on rates of invasion are sparse but suggest a rapid acceleration of incidence and extent due to increases in commerce, tourism, and general travel.\textsuperscript{29}

**Threats to America’s extremely important interests.** The environmental problems of global scale described above, though posing demonstrable threats to America’s national interests, may not be the most serious threats we will face in the next several decades. As noted earlier, a general consensus is emerging in the scientific community that the most serious environmental threats to sustainability in the new century are likely to
involve dramatic degradation of regional systems due to the interactions of multiple, cumulative stresses in places ill-equipped to deal with them. In addition, a significant program of research has demonstrated multiple pathways—in particular, scarcity of crucial resources—through which catastrophic degradation of regional environments has in the past, and likely will in the future, lead to violent conflict among societies in the degraded regions.

It is this propensity of regional syndromes of environment/society degradation to precipitate or contribute to violent conflict that makes them a threat to America’s national interests. In particular, according to the Commission on America’s National Interests’s criteria described above, if potentially destabilizing degradation occurs in “strategically important geographic regions” (perhaps including North America, East Asia, Russia, Europe, and the Mid-East), it threatens an extremely important national interest. If it occurs elsewhere, it threatens an important national interest. By and large, the potential for catastrophic environmental degradation and subsequent violent conflict seems highest in regions with limited resources of economic wealth and state capacity. This view is garnering increasingly serious attention in the United States. The Bureau of Intelligence and Research (INR) at the State Department has concluded that “resource scarcity is much more of an immediate security threat than climate change. Resource degradation tends to be local and will increase ethnic tensions (mostly at a subnational level) between people competing for jobs and land.”

Conclusions and Recommendations

Even a highly restrictive concept of America’s national interests calls for significant national commitments to promoting environmentally sustainable development. America’s vital interests demand an orderly approach to forestall threats to global life support systems that will almost certainly be brought on by excessive emissions of carbon, nitrogen, and other substances not yet identified. Past efforts to mitigate similar threats from radioactive fallout, DDT, and ozone-depleting chemicals provide a model of the sorts of enlightened U.S. leadership that will be required to address such threats. Our extremely important interests demand attention to the risks of conflict-inducing syndromes of regional environment/society degradation in places of strategic concern. No systematic inventory of such risks currently exists; an effort to produce one is urgently needed. Protecting our important interests requires a much broader array of actions. These include preventing regional degradation spirals that might lead to violent conflict anywhere in the world, reducing transborder pollution and movement of organisms, and protecting the global commons in which we have an interest. Although the United States has undertaken a number of measures that are consistent with these goals, the country has conducted no systematic matching of interests, threats, and action priorities. We should do so in the near future.

Priorities for Multilateral Engagement

Unsurprisingly, much of the United States’s ability to protect national interests in sustainable development depends on our ability to undertake effective multilateral action. In presenting his recent millennium report to the UN General Assembly, Secretary-General Kofi A. Annan argued that

"the overarching challenge of our times is to make globalization mean more than bigger markets. To make a success of this great upheaval, we must learn how to govern better and—above all—how to govern better together . . . to get (states) working together on global issues . . . (of) freedom from want, freedom from fear, and the freedom of future generations to sustain their lives on this planet."

Even in the United States, there is widespread agreement that strategies for sustainable development ought to involve multilateral engagement. The State Department’s “Environmental Initiative for the 21st Century” supports a plausible if predictable range of international and regional initiatives. And no less an authority than then-Secretary of State James Baker argued a decade ago that America’s entire approach to bilateral and multilateral assistance is based on the concept of sustainable development. . . . When policies of sustainable development are followed, our economic and our environmental objectives are both achieved.

The strategic plan of the U.S. Agency for International Development indeed is focused on sustainability themes. Moreover, the United States has been instrumental in bringing environment to the fore in the new strategies of the World Bank and other international lending institutions. Nonetheless, of the many voices calling for sustainable development initiatives in the United States today, those calling for multilateral engagement have been surprisingly muted. Among those who do call for multilateral approaches, many have advanced proposals that, although almost certainly worth pursuing, do not meet the strict national interest criteria outlined earlier. Among the few that do, however, a few dominant priorities for near-term action emerge.

Significant progress in a transition toward the sustainability goals most central to America’s interests will be the result not of a few large decisions embodied in international treaties but rather of many small decisions taken by national governments, regional authorities, nongovernmental organizations, private sector enterprises, and individual consumers. Given the complexity of the sustainability challenge and the present state of our understanding, these decisions will often turn out wrong. It is important that those involved in making and living with such inevitably flawed decisions be able to detect and survive their errors, learn from them, and pass the fruits of their experience on to others. In the vast majority of cases, the United States cannot and should not seek to shape individual outcomes of open-ended, regionally embedded deci-
sionmaking in places beyond national borders. Rather, the United States should seek to shape the international environment of norms, rules, information, and incentives in ways that will guide such decisions along pathways consistent with the country’s most deeply held substantive and instrumental interests.27

In particular, the United States has a significant national interest in, and should commit itself to, multilateral activities that promote

- **International law.** The United States should push for agreement on norms, standards, legal structures, and indicators for sustainability that are consistent with fundamental U.S. values regarding sovereignty, openness of markets and rulemaking processes to multiple parties, and protection of minority rights.

- **Global research systems for sustainability science.** The United States needs to play a lead role in the development of an international research and decision support system for sustainable development, modeled on the system that supported agriculture’s green revolution in the late 20th century, but expanding its mandate to target problems of multiple, cumulative threats to life support systems at the regional scale.28

- **Incentive systems.** The United States should support the design and implementation of incentive systems—including, but not restricted to, market signals and the removal of inappropriate subsidies—that will encourage technical innovation and resource consumption activities consistent with a transition toward sustainability. This will almost certainly require the United States, among other things, to examine the implications of our current tax system for sustainability.29

- **Social learning.** The United States should promote institutionalization of a worldwide capacity for information sharing and social learning regarding sustainable development problems, experiences, and solutions, taking advantage of the strengths and legitimacy of the UN system for such tasks.30

Protecting American substantive and instrumental interests while pursuing these sustainability goals in a multilateral context will require active U.S. leadership. The nation’s capacity to exert such leadership is the source of the “soft power” that many analysts of international affairs see as increasingly important for the United States in achieving its goals in an increasingly complex, interdependent, and globalizing world.31 But the feasibility of exerting such international leadership requires credibility that can ultimately derive only from U.S. domestic actions and international reputation for adherence to U.S. commitments and for open-handedness in dealing with others.

Regarding issues of sustainable development and environment, U.S. actions over the last decade have left the country’s credibility as an international leader in short supply. This faltering of credible U.S. leadership for multilateral endeavors in general, and in the realm of sustainable development in particular, is—in the final analysis—the single greatest threat to the national interests of the United States in the increasingly globalized and interdependent world of the 21st century. Fortunately, unlike many other threats, it is one almost wholly in our power to address domestically. Efforts to protect U.S. interests in sustainable development must begin now, and must begin with the examples we set at home.

William C. Clark is the Harvey Brooks Professor of International Science, Public Policy and Human Development at Harvard University’s John F. Kennedy School of Government. Trained as an ecologist, his research now focuses on the sources of long-term social learning to address policy issues arising from the interactions among environment, development, and security concerns in international affairs. Clark has coauthored and coedited many publications, including coediting The Earth Transformed by Human Action (New York: Cambridge University Press, 1990), and Learning to Manage Global Environmental Risks (Cambridge, Mass.: MIT Press, forthcoming 2001). He is an executive editor of Environment. He can be contacted at (617) 495-3981 or william_clark@harvard.edu. This article is © The Aspen Institute and is printed and distributed with permission.


NOTES


2. See, for example, B. L. Turner II et al., eds., The Earth as Transformed by Human Action: Global and Regional Changes in the Biosphere over the Past 500 Years (New York: Cambridge University Press, 1990).


4. Ibid., note 1 above, page 1.


NOTES

to focus on such issues as indoor air pollution, coastal and ocean degradation, pesticide risks, and stratospheric ozone depletion, public and congressional concerns had pushed them to focus instead on the relatively low risks posed by hazardous waste sites, underground storage tanks, and municipal landfill sites. See U.S. EPA, Unfinished Business: A Comprehensive Assessment of Environmental Problems (Washington, D.C.: EPA, 1987); see also a summary by the study directors R. Morgenstern and S. Sessions, “Weighing Environmental Risks: Ehrlich’s Unfinished Business,” Environmental July/August 1988, 15-37, 39-49. Our international priorities have been no more disciplined or consistent. An early example is the 1968 Law of the Sea, initiated under President Richard Nixon, was repudiated by President Ronald Reagan. The Carter administration’s pioneer John F. Kass 2000 report made a strong case for America’s national interests in addressing global environmental problems and then vanished along with the president who had requested it. Two decades later, Secretary of State Warren Christopher’s much-heralded announcement that the United States would subsequently produce an “annual report on Global Environmental Challenges . . . setting U.S. priorities for the coming year” did not even require a change of administration to fall by the wayside—only one such report was ever produced. See Warren Christopher, U.S. Secretary of State, “American Diplomacy and the Global Environmental Challenges of the 21st Century,” speech delivered at Stanford University on 9 April 1996. Available at http://documents.lib.iu.edu/ERC/briefing/indices.html.

13. R. M. Ehrlich, A. Himmelman, and R. Hauser, cochair, America’s National Interests: A Report from The Commission on America’s National Interests, 20th Century: an Overture of How Basic Values and Abiding Characteristics of the United States Ought to Figure in the U.S. Approach to Foreign Eco-


15. Millennium Ecosystem Assessment, note 7 above.

16. WGBU, note 9 above; and NRC, note 7 above.

17. Most of the reports alluded to in notes 14-16 above discuss the usual suspects as threats to sustain-
ability—climate change, the overuse of renewable resources, climate change, physical transformation of landscapes and coastal zones with resultant loss of habitant for biodiversity, the degradation or depletion of freshwater supplies, the ubiquitous spread of persistent pesticides and other chemicals throughout the environ-
ment, disruption of the major biogeochemical cycles (especially carbon, nitrogen, and sulfur), spread of exotic organisms, nuclear contamination, and ozone depletion.

18. NRC Committee on Global Change Research, Global Environmental Change: Research Pathways for the Next Decade (Washington, D.C.: National Aca-
19. See, for example, the reports of the Intergovern-


22. On the globalizing dimensions of environmental dislocations, see, W. C. Clark, “Environmental Global-}


24. UNEP, Report of the Second Session of the Crite-
or Expert Group for Prevision Organic Pollutants UNEP/POPS/INC/C2/5 (Vienna, Austria, 18 June 1999).

25. As one perceptive analysis has observed, “Human transport of species around the Earth is homogenizing the Earth’s biota,” Vitousek et al., note 3 above.


29. Thus, for example, climate variability plus exces-
sive water withdrawals plus chemical pollution plus a minimal capacity for social response have come together to destroy the prospects for sustainable develop-
ment in such places as the Aral Sea. The German Advisory Committee on Global Change has identified more than a dozen such regional degradation “syn-
dromes” occurring in multiple places around the world. See WGBU, note 9 above. Other studies have docu-
mented “critical zones” of enhanced vulnerability; see J. K. Kusserow, R. E. Kusserow, and B. L. Turner B, Regions of Risk: Comparisons of Threatened Environ-

30. See the “Project on Environment Scarcities, State Capacity and Civil Violence” at http://www. uoftlink.utoronto.ca/www/pcc/state.htm. Many of the results of the project are summarized in T. Homer-

31. See also, Kofi Annan, “Sustaining the Earth in the New Millenn-

32. NRC, note 1 above, pages 296-302; and Carnegie Commission on Science, Technology and Government, International Environmental Research and Assessment: Proposals for Better Organization and Decision Mak-


35. Nye, note 37 above.

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