
THE INTERNATIONAL ENVIRONMENTAL FUTURES PROJECT:



**How Can EPA Prepare Itself for Tomorrow's
Problems?**

INTRODUCTION

During the past 15 years, international activities have become an integral component of EPA's core mission of protecting human health and the environment in the U.S. Increasingly, factors that have no single national origin often affect environmental quality in the U.S. From dwindling water supplies along the border with Mexico, to long-range transport of multiple pollutants from Asia, to the disappearance of coral reefs, the U.S. environment is clearly affected by the actions of other countries, while the environments of other countries are also influenced by the choices made by the U.S.

As the boundaries between domestic and global environmental issues continue to erode, the challenges facing the U.S. have become increasingly complex. The remedies to global threats are not solely *environmental*, but also economic, political, cultural, and humanitarian. However, no single federal entity has the expertise or mandate necessary to address all of these dimensions. The political incentive to tackle global environmental issues can also be weak since the U.S. public often does not view such problems as serious threats to national health, domestic environmental quality, or economic well-being. Issues that do manage to capture the public's attention may not pose the greatest dangers or require the most immediate action.

In an effort to gain a broad perspective on these challenges, EPA convened two roundtable discussions on international environmental futures. The Agency invited experts from industry, academia, non-profit organizations, and government to identify changes, positive and negative, likely to affect the environment during the next decade, and to discuss how the EPA might best prepare to address such changes. The attached report captures the findings from those sessions. It also provides recommendations from EPA's Goal 6 Futures Group for actions in support of the findings.

Though the roundtable discussions were broad-ranging, the participants converged on several themes:

- * **The need for increased cooperation** between the U.S. and its foreign partners, among U.S. federal agencies responsible for environmental protection, and between the public and private sectors. No one entity or sector will be able to make significant progress against threats to the global environment. Coordinating such cooperation presents not only a significant challenge, but a substantial opportunity for sharing data, avoiding duplication of effort, and reducing costs.
- * **The increasing threat to the United States and the global environment from transboundary pollution.** Many pollutants are now known to travel far from their points of origin.
- * **The importance of environmental issues to U.S. foreign policy and national security.** The link between environment and trade, transboundary disputes over

water, and migration associated with habitat loss are among those issues that will increasingly affect U.S. foreign policy.

- * The rapid expansion of **information technology** presents opportunities for sharing environmental data worldwide. Technological advances will allow us to collect and analyze more data with greater precision than ever before. Availability of quality data presented in a variety of formats will foster public participation in environmental decision-making and facilitate better-informed policy choices.
- * Mechanisms for **financing environmental infrastructure** remains an unmet need throughout the developing world.

FINDINGS AND RECOMMENDATIONS

This paper presents the major findings from the Project. Following each finding, the paper provides a recommendation from the Goal 6 Futures Group on possible steps that the Agency could take to address the problem identified by the roundtable participants.

The findings and recommendations are organized into three categories: 1) principal “drivers” of change, 2) obstacles or impediments to change, and 3) recommended responses.

SECTION 1: DRIVERS OF CHANGE

FINDING 1

The set of pollutants that have the potential for significant transboundary impact will continue to grow in future years, as will the percentage of pollutant loads impacting the U.S. environment that are generated by sources in other countries (see Figure 1).

BACKGROUND

The U.S. has already identified the long-range atmospheric transport of toxins as an escalating threat to human health and the environment in the U.S. Rapid industrialization and weak environmental enforcement in developing countries, combined with significant growth in the developed world, has resulted in increasing amounts of pollutants being released into the atmosphere. Many industrial pollutants are now known to migrate far from their points of origin, thus posing threats across national borders. Transboundary transport of various contaminants (such as nitrogen oxide, mercury, persistent organics, and particulate matter) will make it increasingly difficult for the U.S. to reach its own domestic air quality regulatory goals. While the EPA has taken steps toward analyzing the sources, circulation, and health effects of many of these chemicals (e.g., International Transport of Atmospheric Pollutants Workgroup and the Persistent Bioaccumulative Toxics Multimedia Routine Monitoring Strategy), gathering the data necessary to develop sound policy addressing the full range of substances with significant potential for transboundary movement requires an expansion of the Agency's efforts.

RECOMMENDATIONS

Improve our understanding of the sources and the potential for control of transboundary pollutants from foreign countries. This effort -- which would include ozone precursors, speciated particulate matter and particulate matter precursors, acidifying and eutrophying deposition precursors, speciated mercury, and persistent organic pollutants — could involve providing emission inventory and source characterization guidance to developing countries, compiling source information from around the world, performing source quantification studies in key countries, and assessing potential control alternatives available in key countries.

Improve our understanding of the physical and chemical processes that govern the long-range transport and transformation of transboundary pollutants and the multimedia pathways through which humans and ecosystems are exposed. This goal could be accomplished through domestic efforts including global and regional atmospheric and multimedia model development, intensive field monitoring studies, and long-term monitoring networks, as well as through cooperative international efforts on model development and evaluation, harmonization of instrumentation and monitoring methods, and monitoring data management, analysis, and dissemination.

Figure 1
Pollutants addressed by the United States in a transboundary context: 1980, 1990, and 2000*

1980	1990	2000
<i>Atmospheric Contaminants</i> radioactive particles sulfur <i>Marine Contaminants</i> oil hazardous chemicals high-level radioactive wastes sewage <i>Multimedia Contaminants</i> mercury and other heavy metals (U.S. / Canada) PBTs (U.S. / Canada) PCBs phosphorus (U.S./Canada) selected pesticides (U.S. / Canada)	<i>Atmospheric Contaminants</i> radioactive particles sulfur, nitrogen oxides (Acid Rain) volatile organic compounds ozone-depleting substances (CFCs, HCFCs, Halons) <i>Marine Contaminants</i> oil hazardous chemicals high-level radioactive wastes incineration at sea industrial wastes low-level radioactive wastes plastics sediment sewage <i>Multimedia Contaminants</i> mercury and other heavy metals (U.S. / Canada) PBTs (U.S. / Canada) PCBs phosphorus (U.S./Canada) selected pesticides (U.S. / Canada)	<i>Atmospheric Contaminants</i> air emissions from ships (NO _x , SO _x , halons) fine particles greenhouse gases heavy metals (cadmium, lead) mercury methyl bromide ozone-depleting substances (CFCs, HCFCs, Halons) radioactive particles sulfur, nitrogen oxides (Acid Rain) volatile organic compounds and tropospheric ozone <i>Marine Contaminants</i> oil hazardous chemicals high-level radioactive wastes incineration at sea industrial wastes low-level radioactive wastes pesticides plastics sediment sewage tributyltin <i>Multimedia Contaminants</i> aldrin chlordane chlordecone DDT dieldrin dioxins/furans endrin heptachlor hexabromobiphenyl hexachlorobenzene (HCB) hexachlorocyclobenzene (HCH) invasive species mercury and other heavy metals (U.S. / Canada) mirex PBTs (U.S. / Canada) PCBs phosphorus (U.S./Canada) polycyclic aromatic hydrocarbons (PAHs) selected pesticides (U.S. / Canada) toxaphene

* This table is only indicative of the transboundary pollutants addressed in 1980, 1990, and 2000; it is not intended to be a representation of the full suite of pollutants addressed at the turn of each decade.

Improve our understanding of the impacts of transboundary pollutants on human health and ecosystems in the United States. This effort could include developing more robust monitoring networks for persistent bioaccumulative toxics and other pollutants, as well as intensive study of susceptible populations and ecosystems such as the Alaskan Arctic.

Work to reduce the sources of transboundary pollutants in foreign countries. EPA could provide additional outreach, education, technical assistance, and technology demonstration programs designed to simultaneously address pollutants that are important on a local as well as global scale.

Increase the effectiveness of U.S. government efforts to address transboundary pollution. EPA should work to improve communication, coordination, and collaboration among Federal agencies engaged in both science and development activities. U.S. government agencies should also increase their collaborative efforts with relevant international bodies, such as the World Bank and the United Nations Environment Program (UNEP).

FINDING 2

The globalization of the world economy will require integration of trade and environmental policies if we are to be successful in addressing one of the significant drivers of environmental change.

BACKGROUND

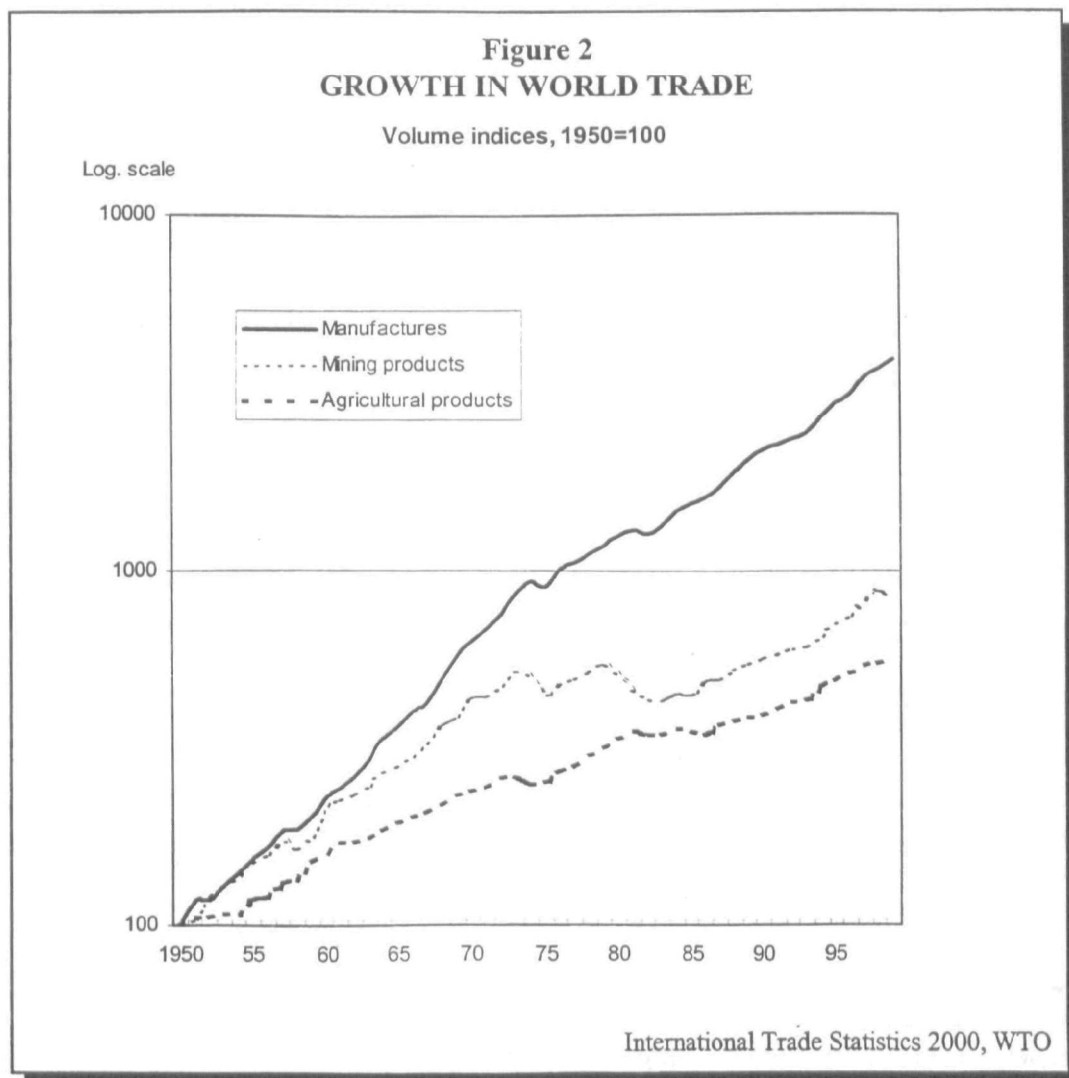
The confluence of environmental protection and international trade agreements has clearly intensified over the past several years. There are serious concerns that trade initiatives will increasingly pit economic gain against environmental protection, fostering a backlash against lowering trade barriers. On the other hand, there is a strong case to be made for the environmental and economic benefits that can accrue from sound trade agreements (Figure 2 illustrates growth in world trade over the last 50 years). Many openings exist to promote synergy between trade and environmental policies. The recommendations below build on work already underway at EPA.

RECOMMENDATIONS

Increase involvement in activities on a parallel track to trade issues, such as technical aid and assistance. EPA may find that its ability to influence international trade agreements is limited by other parties' focus on economic concerns. Therefore, the Agency should not rely completely on trade involvement, but should also strengthen its role in related activities such as technical assistance. A majority of our trading partners lack the capacity to set and implement sound environmental policies. Long-term solutions to the trade and environment tension lie in

expanding the capacity of our trading partners to set and implement standards protective of human health and the environment as an adjunct to economic integration. In addition, in many nations there is a continuing need for environmental program capacity and stable environmental institutions at national and sub-national levels. It is important that sustainable institutional structures be created for building environmental capacity and programs.

Increase participation in voluntary standards-setting activities. National and international standardization bodies provide mechanisms, such as consensus procedures based on openness and transparency, which allow government and stakeholders to collaborate in the development of standards that underpin products and services in trade. Such collaboration joins public policy interests with market interests and can lead to technological innovations that are commercially viable and also serve our environmental protection goals. The U.S. could increase its participation in and support for these standards-setting organizations.



Identify and eliminate environmentally-harmful subsidies. Government subsidies can encourage environmentally unsustainable use of both renewable and non-renewable resources. Trade rules can encourage governments to eliminate these environmentally-harmful subsidies, creating a “win-win” situation for international trade and environmental protection. In the World Trade Organization the U.S. has advocated elimination of subsidies that encourage over-fishing agricultural export. There should be additional effort given to identifying similar harmful subsidies.

Promote expanded trade in environmental goods and technologies. Trade policy can promote environmental progress internationally by, for example, encouraging trade in smoke stack scrubbers, water purification technology or clean energy production technologies. Eliminating trade restrictions on environmental goods and services can foster technology transfer, provide access to the latest approaches to pollution prevention, and lower the cost of achieving environmental objectives. EPA’s capacity-building programs can help create international demand for “green” technologies. While the U.S. has promoted liberalization of trade in environmental services through the World Trade Organization, additional attention from EPA and the Department of Commerce would be beneficial.

Promote responsible corporate behavior. Transborder investment has the potential to bring into countries both cleaner production processes and more environmentally oriented management approaches than those that might otherwise be present. This is especially true if companies develop and apply environmentally responsible corporate practices. Corporations are increasingly active in developing voluntary agreements that encourage environmental measures and public reporting of environmental results. As an adjunct to trade and investment liberalization, the U.S. could advocate referencing an existing code of conduct using non-binding language. A key example of such language is the Organization for Economic Cooperation and Development’s *Guidelines for Multinational Enterprises*, which requires companies to “take due account of the need to protect the environment and avoid creating environmentally related health problems.”

Promote community “Right to Know.” “Right to Know” is an integral component of U.S. domestic policy, and the link between access to information and effective monitoring of corporate behavior is well established. An existing model is the *OECD Guidelines for Multinational Enterprises*, which encourages multinationals to publish relevant information. The U.S. could advocate negotiation of obligations into text or alongside of free trade agreements, or could add references to existing obligations.

Consider additional efforts in ecolabeling. The use of ecolabels on products in trade may provide a tool to promote both environmental protection and economic development. Credible ecolabels can support trade opportunities (e.g., by helping producers tap into the market for “green goods”) and promote more environmentally conscious decision-making by consumers. EPA already has global success with the *Energy Star Program* and is working with Federal partners to encourage environmentally-preferable purchasing. However, full disclosure of certain product information remains a controversial issue that requires careful consideration.

Should EPA encourage further ecolabeling programs, these programs should be developed through open and transparent processes so that all interested parties can contribute to the development of appropriate labeling criteria. EPA should consider whether and how to pursue additional initiatives in this area.

Promote environmental assessments. Over 100 countries have adopted national policies similar to the U.S. National Environmental Policy Act. Some of the countries have gone beyond our requirements (which only assess major federal actions such as government-sponsored or funded projects) to require assessment of private projects. In many countries, such assessments are the only or principal means of establishing conditions for construction and operation of pollution sources that may have a significant impact on natural resources. The U.S. could, in trade agreements or parallel agreements, encourage countries to commit to environmental laws that will provide a system for review of impacts and mechanisms to enforce pertinent mitigation, prevention, and avoidance measures identified and required as conditions for approval of projects.

Play a more active role in formulating trade agreements and assisting with environmental reviews of trade agreements. To help assure the Agency's participation in trade negotiations, EPA should demonstrate its value to these discussions as an expert on environmental policy and science. The continued development of the methods and models for environmental review of trade agreements is a key part of the Agency's contribution. EPA's presence at trade talks will help ensure that environmental considerations are factored into any trade agreement.

Encourage EPA counterparts in other countries to participate in trade agreements. The U.S. government alone cannot ensure that environmental issues are addressed and appropriate provisions are included in or alongside international trade accords. Therefore, EPA should use its established relationships with environmental agencies abroad to encourage their participation in trade negotiations and to illustrate the environmental and economic benefits that can accrue from such participation.

SECTION 2: IMPEDIMENTS TO CHANGE

FINDING 3

Low environmental literacy of the public is undermining public and political consensus for action on environmental problems (including global environmental issues).

BACKGROUND

The level of understanding of specific environmental challenges that we face in the U.S. is very low (see Figure 3). For example, few people understand the range of potential consequences associated with exposure to heavy metals or global warming. The perception of environmental

challenges that we face as a country is often driven by limited information that is too frequently the product of advocacy science or an unbalanced presentation of the relevant concerns. Many members of the public are unsure if alleged environmental threats are real. The perception that most environmental controls occur only at great cost to U.S. industry and society is also widespread.

Figure 3
Environmental Literacy in the U.S.
(Based on a 1998 Roper Study)

- On a simple 10-question environmental quiz, the American public averages just two questions correct.
- A majority of the public thinks (incorrectly) that energy is produced in non air-polluting ways. Only one in three see coal burning as an issue.
- Only 9% of the American public understands that micro-organisms in water supplies are the leading cause of childhood death worldwide.
- About two out of five Americans are able to identify the term watershed as a land area that drains into a specific body of water.

Recognizing that the environmental literacy of the country is quite low, it has become increasingly hard to foresee strong public and political support to address numerous problems we face. This is especially true on global environmental issues where understanding of the problems and consequences is particularly lacking.

RECOMMENDATION

Empower the Agency to dramatically expand current efforts to educate the public on the major environmental challenges we face as a country. This communication effort should include a specific component targeted to increase environmental literacy on global environmental challenges (e.g., persistent organic pollutants, global warming, oceans) where the U.S. needs to reestablish international leadership.

FINDING 4

A proliferation of international institutions and venues addressing environmental issues has made it difficult for the U.S. and the international community to focus resources in a cost-effective manner.

BACKGROUND

In the last thirty years, awareness of environmental problems has led to the negotiation of numerous environmental treaties and other non-binding (soft law) resolutions and agreements. Coincident with the expanded international law on the environment, numerous international organizations and other venues have emerged for debating environmental policy at bilateral, regional, and global scales. The sheer number of organizations and their attendant meetings have greatly taxed the ability of the Department of State, EPA, and other relevant stakeholders to staff these events. As a consequence, the level of thought, preparation, and degree of political commitment associated with any single event has also been compromised. More importantly, the ability to focus people and resources on the issues of greatest concern and upon those venues that provide the most efficient vehicle for addressing these problems has also suffered.

RECOMMENDATION

Invite the Department of State to undertake a joint review with EPA of the numerous international organizations, environmental discussion venues, and events, with the aim of determining which institutions and venues offer the most efficient and effective vehicles for achieving our international environmental objectives. This review (performed in cooperation with the Council for Environmental Quality, the National Security Council, and other appropriate agencies) should be undertaken with a view to setting priorities among the numerous organizations and events that the U.S. actively supports, and to focus resources on those venues that offer the best chance of definitive outcomes on issues important to the U.S. The review should also recognize that higher-level political venues do not necessarily produce more definitive outcomes in achieving our environmental and foreign policy objectives. Indeed, some policy-setting venues that are not accompanied by high-level political representation (such as U.S. participation in the OECD Chemicals Program and the International Maritime Organization) have been quite effective.

SECTION 3: RESPONSES TO CHANGE

FINDING 5

There is a need to provide better environmental information at state and local levels that builds on the environmental experience and lessons-learned of other countries.

BACKGROUND

As EPA has increased its delegation of implementation responsibilities to state and local authorities, these governments have asked for better scientific information for use in carrying out their own policies and programs. This type of outreach is also important with respect to international involvements, as we have an opportunity to improve our own approach to

environmental policy by evaluating the experience of other countries. This effort can be particularly important for local governments dealing with redevelopment of contaminated sites and other urban problems; indeed, urban redevelopment has been addressed with notable success in several other countries.

RECOMMENDATION

Institute a formal program to transfer "lessons-learned" from other countries that have already experimented with and benefitted from alternative approaches to environmental protection. Institute a program within EPA's Office of International Activities, in cooperation with the Office of Research and Development, other national program managers and regional offices, that will facilitate transferring "lessons-learned" from other countries that have already experimented with and benefitted from alternative approaches to environmental protection (see Figure 4). Other countries may also be on the leading edge of addressing particular environmental problems that have only recently become the focus of attention in the U.S. Therefore, the Agency should explicitly seek to draw upon successful approaches utilized in other countries when designing new programs in the U.S., or when evaluating the effectiveness of current U.S. environmental programs.

Figure 4

Lessons Learned: The Brownfields / Urban Environments Program

Brownfields: Abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.

The Brownfields/Urban Environments Program helps U.S. cities learn from urban redevelopment and smart growth programs that have been successful in Germany, the United Kingdom, Japan, Sweden, Spain, and other countries. Some of the achievements of the Brownfields/Urban Environments Program include:

- Helping U.S. states, communities, and other stakeholders in economic development to work together to prevent, address, clean up, and sustainably reuse brownfields.
- Case studies and testing in US cities of model redevelopment, transportation, and "green building" programs successfully employed in Germany, the Netherlands, Great Britain, and Canada.
- Specific cities benefiting from the program to date include Buffalo, NY; Niagara Falls, NY; New York City; Bridgeport, CT; Cape Charles, VA; Lawrence, MA; Portland, OR; San Francisco, CA; and Seattle, WA.

FINDING 6

The mechanisms for financing environmental infrastructure are inadequate throughout the developing world. Far too much reliance is placed on central government financial resources such that the environment must compete for scarce funds against high-priority needs such as food, housing, public health, and even public safety and military requirements. As this situation persists, the ability to address global environmental problems will steadily decline and political instability might result from the regional conflicts motivated by resource shortages and environmental degradation.

BACKGROUND

During the last 40 years we have witnessed a series of bilateral and multilateral efforts to improve conditions in developing countries. These efforts have produced mixed results, with many well-financed projects resulting in unmitigated failures. Recently there have been efforts to stimulate more innovative financing mechanisms with increasing involvement from the private sector. Many stakeholders have asserted that private financing sources are the necessary vehicle for future improvements, although some doubt that even private finance is capable of addressing many of the serious environmental challenges we face in providing safe drinking water, proper sanitation of domestic wastewater and other large infrastructure needs. What is clear, however, is that private capital markets can play a significant role in addressing these needs.

RECOMMENDATIONS

Investigate the feasibility of establishing an environmental finance mechanism for support of environmental infrastructure projects worldwide. This study should examine the gap between what is available from central government financial resources as well as bilateral and multilateral finance programs, against what is needed from private capital, through municipal bond markets and other mechanisms. Particular attention should be paid to the role of financial guarantees in terms of leveraging new funds into the environmental sector.

Continue development of EPA's technical assistance and training program. This effort is two-pronged. EPA must continue its work with foreign governments to create permanent, nationwide, self-supporting systems for financing environmental projects such as domestic municipal bond markets. It must also continue to work with project sponsors at the regional and local levels because even when financing is available, projects must be technically and financially well prepared in order to: 1) produce meaningful long-term results, and 2) gain access to the additional financing.

Continue efforts to "green" the International Financial Institutions (IFIs) and Export Credit Agreements (ECAs). Efforts to use IFIs and ECAs to stimulate investment in environmental

projects may be improved over time through agreements that will open the way for environmental professionals from EPA and other environmental organizations to take part in the preparation and review of proposed projects. Broader participation in project preparation can result in projects that are financially viable and environmentally beneficial, while also increasing public acceptance and support for projects that may otherwise prove controversial.

FINDING 7

There needs to be greater collaboration on international environmental issues among U.S. federal agencies.

BACKGROUND

The U.S. should work toward a broader national consensus concerning our role in international environmental issues. As the principal Agency charged with protecting the environment, EPA should develop stronger alliances and exchanges with other agencies. In addition to those agencies directly involved in environmental issues (e.g., National Oceanic and Atmospheric Administration, U.S. Department of Agriculture, Department of the Interior, Department of Energy, and the U.S. Coast Guard), the Agency should collaborate more effectively with the Department of State, the U.S. Customs Service, the National Security Council and other entities that do not have a specific environmental mandate. In addition, EPA's coordination with other agencies needs to take on a more comprehensive perspective. Too often, coordination is on highly specific issues with too little attention given to the broader policy implications of a given decision.

RECOMMENDATION

EPA should make increased cooperation with other Federal agencies a priority. EPA has long-established working relationships with federal agencies such as the Department of State, the Agency for International Development, the National Oceanic and Atmospheric Administration, and others. Nonetheless, significant gaps remain among federal agencies, requiring increased communication and cooperation.

A conscious effort should be made in the Administration to broadly consider those issues that transect the domestic and international spheres. Efforts to broaden our perspective on transportation policy, climate and energy, oceans policy, trade, and other issues should result in better long-term results that consider future trends.

FINDING 8

In many developing countries, environmental management will increasingly become the responsibility of state and local governments.

BACKGROUND

Over the past several years, the national governments in India, Thailand and other developing countries have begun to give their state and municipal governments increased authority to address local environmental issues. In most cases, officials at these sub-federal levels of government do not have the adequate training or the resources necessary to manage environmental issues appropriately.

RECOMMENDATION

Increase emphasis in EPA's technical assistance programs at the state and local level.

Though EPA has taken initial steps towards working directly with some state-level governments in developing countries, its programs still focus on federal-to-federal relations. EPA needs to do more to build the environmental management capacity of sub-federal governments. The Agency should work in concert with its counterpart agencies in developing countries to address the needs of state and local governments that have recently assumed or that will soon assume increased environmental oversight responsibilities. Assistance to these governments could include training, aid in developing policies, and advice on designing environmental information systems, such as Pollutant Release and Transfer Registers and other right-to-know activities. Aiding governments in increasing public participation through environmental awareness campaigns should also be a key focus of the Agency's work in this area.

Facilitate state-to-state and community-to-community programs. Since EPA's experience represents but one side in the federal-state-municipal relationship, it should work to facilitate state-to-state and municipality-to-municipality relationships between governments in the U.S. and appropriate counterparts overseas. These U.S. local governments would be well positioned to assist developing-country states and cities design sound environmental management systems. Members of the Council of State Governments, the International City/County Managers Association, the National Conference of Mayors, and similar organizations have relevant experience in developing environmental management systems. EPA should engage these groups as partners in its work with foreign state and local governments.

In the same context, U.S. states and municipalities could benefit significantly from experience in other locations around the world. As noted earlier in the report, EPA should encourage the

transfer of “lessons-learned” from other countries. This approach is equally true at the state and local level, where various cities around the world have undertaken environment and development programs that have the potential for application in U.S. communities.

FINDING 9

Many environmental issues require long time-frames for problem assessment and planning. However, the Agency does not yet have adequate mechanisms in place to take necessary steps in establishing protections against new threats to the environment. EPA needs to better prepare itself to address emerging environmental issues that will constitute the most significant environmental challenges that we face in future years.

BACKGROUND

Several EPA groups, such as the Agency-wide Futures Network, seek to incorporate emerging issues into the Agency’s Planning and budget process. Nonetheless, EPA’s planning activities still remain largely reactive. The current approach to strategic planning relies heavily on accounting for programs already in progress, which can leave the Agency poorly positioned to integrate such emerging issues as biotechnology, conversion to fuel cells, the environmental impacts of free trade, etc. into its strategic plan.

Also compromising long-range planning efforts is the fact that the U.S. does not produce national environmental indicators or national reports on the state of the environment. This situation makes it difficult for decision makers and stakeholders to track progress toward environmental goals. In contrast, the EU and certain EU Member States produce sophisticated policy-level reports containing environmental indicators and periodic state of the environment reports. The EU recently challenged the U.S. to publish environmental data so that the public could “benchmark the Union against the U.S.” Japan and Canada also produce periodic reports on their environmental performance.

RECOMMENDATION

Work to integrate futures planning into Agency research, planning, and budget processes.

The Agency should consider how efforts now underway in the Science Policy Council, the Futures Network, National Advisory Council for Environmental Policy and Technology (NACEPT), and other venues within EPA could be coordinated to greater effect. The Agency should also continue its cooperative efforts on futures with outside organizations. For instance, EPA should try to work with external think tanks such as the Woodrow Wilson Center for Scholars as it examines the possible effects that technological advances and rapid social change might have on the environment. The Agency should also continue its participation in the inter-agency working group on futures, which may improve coordination among planning efforts in various Executive Branch agencies.

Develop an Annual Environmental Indicators Report for the United States. Strengthen EPA's public reporting on environmental outcomes by producing a document comparable to the EU report Environmental Signals, drawing on "best practices" from Europe and elsewhere. This report could be provided to Congress and other EPA stakeholders in connection with EPA's annual reports outlining progress in meeting our strategic goals. The report would help us assess over the long-term what progress we are making as a country in improving the *state of the environment*.

APPENDIX A

Project Description

EPA's Office of International Activities (OIA), in cooperation with the Office of the Chief Financial Officer (OCFO), recently undertook a project on international environmental futures. Representatives from OIA, OCFO, and other interested offices formed a group (the Goal 6 Futures Group) to develop and manage the project.

The Group convened a panel of environmental experts from government, academia, the private sector, and NGOs to assist in the foresight activities. The panel members participated in two roundtable sessions to discuss trends likely to have a substantial impact on the global environment during the next decade. Appendix B includes a complete list of the experts who participated in the roundtables. The Group asked panel members to concentrate on the following three objectives during their discussions:

- Identify key global economic, technological, and social trends, particularly those that may affect the environment.
- Determine potential impact of these trends on the U.S. environment and EPA.
- Provide EPA with recommendations to help shape the Agency's international environmental agenda.

Prior to the first roundtable, a contractor to the Goal 6 Futures Group conducted telephone interviews with most of the roundtable participants to gather their preliminary thoughts on global trends and the environment. These brief conversations helped frame the agenda and the discussion for the first roundtable session, which explored those global trends and developments that are most likely to drive future environmental challenges.

The second session built on the observations of the first session, focusing on issues of particular relevance to the United States and to EPA's future planning efforts. In particular, participants worked to identify possible policy responses to the major trends and challenges discussed during the first roundtable.

APPENDIX B

List of Roundtable Participants

<u>NAME</u>	<u>AFFILIATION</u>
Richard Ackermann	World Bank
Brad Allenby	AT&T
Gordon Binder	AQUA International Partners
William Clark	Kennedy School of Government/ Harvard University
Jerry Clifford	U.S. EPA
Michael Curley	General Trade Assistance Corp.
Nathan Fields	African Development Foundation
Christiana Figueres	Sustainable Development in the Americas (CSDA)
Linda J. Fisher [former Asst. Admin.]	U.S. EPA
Gary Foley	U.S. EPA
Paul Frandano	Central Intelligence Agency
Ernest Green*	Lehman Brothers, Inc.
Hank Habicht*	Global Environment & Technology Foundation (GETF)
Jeremy Hagger	U.S.-Asia Environmental Partnership
Scott Hajost	International Union Conservation of Nature – U.S.
Jennifer Haverkamp	Office of the U.S. Trade Representative
Alan Hecht	U.S. EPA
Bill Krist	Woodrow Wilson Center
Jonathan Lash*	World Resources Institute
Tom Loftus	World Health Organization
Jonathan Margolis	U.S. Department of State
Dr. William Moomaw	Fletcher School of Law & Diplomacy/ Tufts University
Jane Nishida	Maryland Department of the Environment
William Nitze [former Asst. Admin.]	U.S. EPA
David Rejeski	Woodrow Wilson Center
Randal Scott	U.S. Department of Energy
Michael Shapiro	U.S. EPA
Robert Watson	World Bank
Tseming Yang	Univ. of Vermont School of Law
David Ziegele	U.S. EPA

[* – roundtable co-Chair]