

T O W A R D S
A S U S T A I N A B L E
A M E R I C A



May 1999

Advancing Prosperity, Opportunity,
and a Healthy Environment for the 21st Century

The President's Council on Sustainable
Development

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The President's Council on Sustainable

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The federal officials who serve on the Council participated actively in developing the recommendations in this report, but those recommendations do not necessarily reflect Administration policy. The Council will deliver its report to the President for his consideration. He has not yet reviewed or endorsed the recommendations.

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PREFACE

Humanity faces an unprecedented challenge as our numbers grow, while Earth and its capacity to support us do not. People across the United States and around the world aspire to better lives for themselves and for their children: food, shelter, a safe and healthy environment, education, jobs, and other material needs and conveniences. Industries strive to produce more goods, farmers to grow more crops; and human demands on forests, fields, rivers, and oceans increase. Our challenge is to create a future in which prosperity and opportunity increase while life flourishes and pressures on oceans, earth, and atmosphere — the biosphere — diminish; to create, as the Council’s vision suggests, “a life-sustaining Earth” that supports “a dignified, peaceful, and equitable existence.”

It is a powerful vision, and the two of us, brought together as co-chairs of the President’s Council on Sustainable Development (PCSD), fervently believe it is achievable — a unifying and necessary goal for the boundless capacity of human ingenuity so manifest in America. One of us leads a company committed to achieving that goal within its own operations, the other heads an organization whose purpose is to provide information and ideas to make progress toward that goal possible for all. And even as we see evidence that damage to natural systems is accelerating, we also see individuals, companies, and communities finding solutions that work: new products, new technologies, changed minds and changed approaches that provide improved service, better information, and wider choice with drastically reduced impact on the environment.

The Council, building on the wisdom of citizens, and business and government leaders, has sought in this report to articulate the goal of a sustainable America in terms of concrete ideas, examples of success, and proposals for national policy. From creative ways to eliminate pollution to mortgages that fight sprawl, the Council’s report highlights approaches that work and has built consensus around innovative ideas. As the debate over climate change has heated up, the Council found agreement on constructive proposals to reduce emissions of greenhouse gases, and provided knowledge and opportunities for further reductions in the future. We have seen our first report, *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*, used as the basis for debates about the future of urban and rural America, and to help build the “smart growth” movement as people get together to create more livable communities.

We have seen our members take these ideas back to their own communities. Sam Johnson, chairman of S.C. Johnson & Son, for example, recognizes the importance of bringing new and diverse faces and opinions to the table, and giving each voice equal weight and consideration. As he notes, “Today, my company is a catalyst for dialogue in Racine, Wisconsin, our headquarters home, and other communities around the world.”

Scott Bernstein, president of the Center for Neighborhood Technology, points out that “The Council’s policy recommendations are the first to put people, places, and markets together, and they reflect how greatly Americans care about their communities. By putting the place back into marketplace, these recommendations will bring home the benefits of sustainable development for everyone.”

PCSD members have also carried the Council’s work to many other countries where the idea of government, industry, and civil society collaborating on an equal footing to develop vision, goals, and policies for sustainability is astonishing. We have seen those countries launch efforts of their own, drawing on the U.S. experience, and providing remarkable and important examples of pluralism within their own societies.

As Deputy Under Secretary of Defense Sherri Goodman notes, the participation of federal agencies in the Council has sharply changed the nature of the discussion within the federal government. “Sustainable Development is no longer just a concern of the Environmental Protection Agency, but one of Commerce, Transportation, and other agencies,” she says. “PCSD has helped me elevate the concept of sustainability here at the Department of Defense.”

Above all, the Council has demonstrated the will and capacity of leaders from different sectors of American life to find agreement on issues of importance about our future. As the co-chairs' preface to *Sustainable America* noted, "The politics of mistrust are the greatest obstacle to the process of innovation and change that we all believe is necessary to achieve the goals we share. We believe consensus will move America forward both faster and farther than confrontation. Moreover, we believe that consensus is the public's job, not the government's."

John Adams, president of the Natural Resources Defense Council, speaking to the Council's role as a place for diverse ideas to flourish and take root, observes that "Never before have cabinet officials, heads of major corporations, and environmental and community organizations...joined together to work out the difficult decisions we face. If we are to have a healthy environment, we must achieve a sustainable world. The PCSD is a strong start."

Aside from its role in developing consensus recommendations on environmental policy, the Council has become to much of the world a symbol of national commitment to sustainable development, and the social capital invested in forging the consensus-building process ought to be preserved and kept working for a sustainable America. It is an important process and an important symbol that should be built upon.

After delivering this report to the President, the Council will conclude its work by co-sponsoring the National Town Meeting for a Sustainable America. The Town Meeting will convene May 2-5, 1999, centered in Detroit's Cobo Conference Center. Over 160 events will lead up to the meeting, and over 50 concurrent events will take place in American communities. The objective is to draw Americans together around the theme of sustainable development, to share the wisdom of our best thinkers and the energy of our best doers. As the awareness of sustainable development continues to increase in Americans from all walks of life — and as the Town Meeting contributes to this process — the Council hopes and believes that a consensus will build in the land, as it has over the last six years in the PCSD itself, that sustainable development is both right and smart for America. That groundswell among the people will move government and business alike to do the things that will further the well-being of our society, sustainably, and set an example for the world.

We want to thank the PCSD staff, and their exceptional leader, Marty Spitzer; the people in communities across America who made our work possible; and the PCSD members and their staff whose hard work, wisdom, and dedication made chairing the Council an inspiring experience.



Ray Anderson
Chairman and Chief Executive Officer
Interface, Inc.



Jonathan Lash
President
World Resources Institute

National Goals Towards Sustainable Development

The Council first published these goals in its 1996 report, *Sustainable America*. They emerged from our vision and still express the Council's shared aspirations. They are truly interdependent and flow from our understanding that it is essential to seek economic prosperity, environmental protection, and social equity together. The achievement of any one goal is not enough to ensure that future generations will have at least the same opportunities to live and prosper that this generation enjoys: all are needed.

- GOAL 1: HEALTH AND THE ENVIRONMENT**
Ensure that every person enjoys the benefits of clean air, clean water, and a healthy environment at home, at work, and at play.
- GOAL 2: ECONOMIC PROSPERITY**
Sustain a healthy U.S. economy that grows sufficiently to create meaningful jobs, reduce poverty, and provide the opportunity for a high quality of life for all in an increasingly competitive world.
- GOAL 3: EQUITY**
Ensure that all Americans are afforded justice and have the opportunity to achieve economic, environmental, and social well-being.
- GOAL 4: CONSERVATION OF NATURE**
Use, conserve, protect, and restore natural resources — land, air, water, and biodiversity — in ways that help ensure long-term social, economic, and environmental benefits for ourselves and future generations.
- GOAL 5: STEWARDSHIP**
Create a widely held ethic of stewardship that strongly encourages individuals, institutions, and corporations to take full responsibility for the economic, environmental, and social consequences of their actions.
- GOAL 6: SUSTAINABLE COMMUNITIES**
Encourage people to work together to create healthy communities where natural and historic resources are preserved, jobs are available, sprawl is contained, neighborhoods are secure, education is lifelong, transportation and health care are accessible, and all citizens have opportunities to improve the quality of their lives.
- GOAL 7: CIVIC ENGAGEMENT**
Create full opportunity for citizens, businesses, and communities to participate in and influence the natural resource, environmental, and economic decisions that affect them.
- GOAL 8: POPULATION**
Move toward stabilization of U.S. population.
- GOAL 9: INTERNATIONAL RESPONSIBILITY**
Take a leadership role in the development and implementation of global sustainable development policies, standards of conduct, and trade and foreign policies that further the achievement of sustainability.
- GOAL 10: EDUCATION**
Ensure that all Americans have equal access to education and lifelong learning opportunities that will prepare them for meaningful work, a high quality of life, and an understanding of the concepts involved in sustainable development.



VISION STATEMENT

Our vision is of a life-sustaining Earth. We are committed to the achievement of a dignified, peaceful, and equitable existence. A sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations. Our nation will protect its environment, its natural resource base, and the functions and viability of natural systems on which all life depends.

—The President's Council on Sustainable Development

We believe

As Council members, we share certain beliefs that underlie all of our agreements. We first published these beliefs in our 1996 report, *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*. They are as valid now as they were then. We believe:

- 1.** To achieve our vision of sustainable development, some things must grow — jobs, productivity, wages, capital and savings, profits, information, knowledge, and education — and others — pollution, waste, and poverty — must not.
- 2.** Change is inevitable and necessary for the sake of future generations and for ourselves. We can choose a course for change that will lead to the mutually reinforcing goals of economic growth, environmental protection, and social equity.
- 3.** Steady progress in reducing disparities in education, opportunity, and environmental risk within society is essential to economic growth, environmental health, and social justice.
- 4.** The United States made great progress in protecting the environment in the last 25 years, and must continue to make progress in the next 25 years. We can achieve that goal because market incentives and the power of consumers can lead to significant improvements in environmental performance at less cost.
- 5.** Economic growth based on technological innovation, improved efficiency, and expanding global markets is essential for progress toward greater prosperity, equity, and environmental quality.
- 6.** Environmental regulations have improved and must continue to improve the lives of all Americans. Basic standards of performance that are clear, fair, and consistently enforced remain necessary to protect that progress. The current regulatory system should be improved to deliver required results at lower costs. In addition, the system should provide enhanced flexibility in return for superior environmental performance.

believe

- 7.** Environmental progress will depend on individual, institutional, and corporate responsibility, commitment, and stewardship.
- 8.** We need a new collaborative decision process that leads to better decisions; more rapid change; and more sensible use of human, natural, and financial resources in achieving our goals.
- 9.** The nation must strengthen its communities and enhance their role in decisions about environment, equity, natural resources, and economic progress so that the individuals and institutions most immediately affected can join with others in the decision process.
- 10.** Economic growth, environmental protection, and social equity are linked. We need to develop integrated policies to achieve these national goals.
- 11.** The United States should have policies and programs that contribute to stabilizing global human population; this objective is critical if we hope to have the resources needed to ensure a high quality of life for future generations.
- 12.** Even in the face of scientific uncertainty, society should take reasonable actions to avert risks where the potential harm to human health or the environment is thought to be serious or irreparable.
- 13.** Steady advances in science and technology are essential to help improve economic efficiency, protect and restore natural systems, and modify consumption patterns.
- 14.** A growing economy and healthy environment are essential to national and global security.
- 15.** A knowledgeable public, the free flow of information, and opportunities for review and redress are critically important to open, equitable, and effective decisionmaking.
- 16.** Citizens must have access to high-quality and lifelong formal and nonformal education that enables them to understand the interdependence of economic prosperity, environmental quality, and social equity — and prepares them to take actions that support all three.

C H A P T E R 1

INTRODUCTION

The Journey

As the world stands at the threshold of the 21st century, the President's Council on Sustainable Development is completing its sixth year working to envision and realize a new American dream. In our dream of a better future, prosperity, fairness, and a healthy environment are inseparable threads woven into the fabric of our everyday life at work, at play, with our families and communities, and among nations.

“Our vision is of a life-sustaining Earth. We are committed to the achievement of a dignified, peaceful, and equitable existence. A sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations. Our nation will protect its environment, its natural resource base, and the functions and viability of natural systems on which all life depends.”

— *Sustainable America*, 1996

We began this journey in June 1993 when President Clinton asked the Council — a groundbreaking partnership of leaders from industry, government, nonprofit organizations, and Native American groups — to recommend a national action strategy for sustainable development. We began by exploring some of the most challenging issues of our day, including the rapid social, economic, environmental, and technological changes all about us — locally, nationally, and internationally. We struggled with many difficult and seemingly inconsistent ideas. We listened to, occasionally argued with, and learned from one another. We traveled the country and spoke to Americans from all walks of life, taking inspiration from the many wonderful people and projects under way across America. Thousands of people participated in Council workshops, conferences, task forces, and public meetings.

By early 1996, we reached agreement on a set of common beliefs and recommendations and delivered them to the President in our first report, *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*.¹ These beliefs and recommendations, which remain timely, are a compass for a more sustainable future. They are also the basis of all our work since then. The recommendations are comprehensive, addressing everything from economic and regulatory policy to natural resource management, from strengthening communities and education to population, consumption, and international leadership. Crafted to move the nation towards sustainability, the recommendations are directed towards public and private sectors, as well as citizens.

Upon receiving the report, the President asked us to begin implementing our recommendations. Among our first actions, the Council supported efforts to replicate its successful collaborative approach at the local and regional levels. The Council worked in partnership with the federal government to support the efforts of the U.S. Conference of Mayors and the National Association of Counties as they created the Joint Center for Sustainable Communities in 1996. This unique partnership has provided a forum for local political leaders to support regional and multistakeholder strategies, share success stories, and provide peer-to-peer learning.

In response to our recommendations to create regional councils that could address sustainable development closer to the communities where it needs to be implemented, several Council members led the creation of the Pacific Northwest Regional Council. The regional council took the successful model established by the President's Council and applied it to the challenging issues facing the U.S. Pacific Northwest. Using our multistakeholder approach and goals as a starting point, the regional council completed a regional visioning process, implemented an awards program to recognize regional leaders in sustainability, and is completing a comprehensive set of policy recommendations for the Pacific Northwest. The Council also directly spurred the creation of the Bay Area Alliance for Sustainable Development, a regional effort in the San Francisco Bay area led by several Council members, among others. Drawing on local community, business, and government leaders, the Bay Area Alliance is building consensus in a metropolitan area with hundreds of local political jurisdictions and challenging economic, environmental, and social issues.

Upon receiving our initial recommendations, President Clinton asked Vice President Gore to oversee



Sustainable Racine is a community-based effort to achieve sustainable development in Racine, Wisconsin. Community forums helped shape the group's vision for a sustainable future. Council member Sam Johnson helped spur this local initiative. Photo: Ron Thomas, S.C. Johnson, Inc.

implementation of the report within the federal government. Federal Interagency Working Groups on Sustainable Development, Education for Sustainability, Material and Energy Flows, and Sustainable Development Indicators have accomplished a great deal since 1996. These groups have inventoried domestic federal programs that support or hinder sustainability, fostered the Administration's work on livable communities, and produced path-breaking reports that are either now available, or will soon be available, to the public.² Additionally, since 1997, the White House Council on Environmental Quality and the Community Empowerment Board in the Office of the Vice President have co-chaired the Interagency Working Group on Sustainable Communities. Starting with the recommendations from *Sustainable America*, the working group laid the policy groundwork for the livable communities agenda Vice President Gore announced on January 11, 1999.

In late 1996, we produced a second report, *Building on Consensus: A Progress Report on Sustainable America*.³ In this report, the Council recommended to President Clinton that he fully integrate sustainable development into his second term agenda. We also recommended a set of specific ideas for moving *Sustainable America's* original policy goals to concrete action.

By early 1997, at the President's request, we focused on forging consensus in four specific policy areas of sustainable development, increased our efforts to promote

implementation, began getting the word out about sustainable development to larger audiences, and encouraged efforts to evaluate and report on progress. Substantively, the President asked us to focus on (1) policies to reduce greenhouse gas emissions; (2) the next steps in building the new environmental management system of the 21st century; (3) policies and approaches to build partnerships to strengthen communities; and (4) policies to foster U.S. leadership in international sustainable development policy, particularly in international capital flows.

Like our earlier reports, this one is the result of an open, multistakeholder process. We traveled the country and worked collaboratively to overcome differences of opinion and perspective to find common ground. In some cases, we found common ground in uncommon and sometimes difficult circumstances. Our work on climate change was some of our most challenging. As we navigated through the often heated public debates surrounding the international climate negotiations, we reached agreement on critical steps needed to reduce greenhouse gas emissions independent of agreement on international treaties. By listening to each other and working together, we were able to overcome many of our differences in other policy areas as well. The mounting evidence that the Council's efforts and recommendations can lead to real progress inspired us as we tackled some of the most challenging policy issues facing the United States at the dawn of the 21st century.

We have also been inspired by the hundreds of creative efforts all across America to make sustainable development real in our homes, workplaces, and communities. We document and honor many of these efforts in this report.

unique roles of the council

The President's Council on Sustainable Development has served a variety of valuable, interrelated, and unique roles. In its advisory capacity, the Council has been the only presidential (or federal advisory) panel charged with recommending to the President policies across a full spectrum of economic, environmental, and social issues. The Council's diverse and high-level membership, drawn from leadership throughout the public and private sectors, suggests that our recommendations have broad enough support to be implemented successfully.

In policymaking, the Council has been a thoughtful and neutral place for people of different views and backgrounds to come together and listen to and learn from one another, outside the limelight and glare of the news story or controversy of the day. For many people, it has served as an incubator for new and creative policy and implementation ideas. For others, it has provided a bully pulpit for advancing issues important to the American people.

The Council also has served several important symbolic roles. The existence of a presidential advisory commission on sustainable development has demonstrated the national and international importance of sustainable development and the U.S. commitment to a more sustainable future. The symbolism has been heightened because the Council has been comprised of leaders from all sectors of society who stand together in their belief that our economic, environmental, and social futures are inextricably linked and must be given equal respect.

The Council's symbolic value has empowered thou-



Efforts of Five E's Unlimited to achieve sustainable community development celebrate diversity and focus on our children's children as the reasons to exist and act.

Photo: R. Warren Flint, Five E's Unlimited, Pungoteague, Virginia.

sands of everyday champions for these issues in communities, businesses, and governments. We have heard from many people over the years who have told us, "Your work legitimizes my work." We have heard people describe how

our report, *Sustainable America*, personally inspired them, or gave them credibility to continue innovative projects for which they did not yet have widespread support.

At a time when society is tiring of adversarial strategies for solving our most pressing problems, the Council has demonstrated that collaborative strategies can work. We believe that collaboration is a cornerstone for a sustainable future and that the Council stands as a public symbol of its possibilities.

Internationally, the Council has been the focal point for carrying forward U.S. commitments made at the Earth Summit in Brazil in 1992. We have been held out as a model for many other countries' national sustainable development councils, and many nations have drawn from our experiences in creating their own councils. Against the other national councils formed exclusively from the government sector, the business sector, or both, we stand in contrast as a model of inclusiveness and democratic ideals. The Council's most visible product, *Sustainable America*, has been translated into several languages.

The Council's symbolic value has also been symbiotic. Our work has been inspired and legitimized by the very people who say we have supported them. We are grateful for the opportunity to serve in this capacity and to meet and learn from so many inspiring people. Though intangible, symbolic leadership will continue to be fundamental for the United States to become more sustainable.

The Council has also had tremendous convening power, and we have received an outpouring of offers from people all across the country to participate in our work. In our six years, we have been sought after by hundreds of organizations that wanted to serve on our task forces or co-sponsor events, meetings, and initiatives. Clearly, affiliation with a White House advisory council was a motivation for many. Just as important, we believe, was the Council's reputation for operating collaboratively and inclusively, with respect for the diverse ideas and interests represented throughout America.

During its latter years, the Council's convening role has shifted somewhat. Where we once focused exclusively on generating policy ideas, we now advise also on spurring implementation and demonstrating the success of policy ideas previously recommended. We have moved in this direction in part because our charter requested this of us, but also because it is clearly time to move ideas into action.

Finally, the Council has served as a clearinghouse for people looking for or wanting to disseminate information and ideas on sustainable development. Through reports, our Website,⁴ speaking engagements, responses to citizen requests, and the National Town Meeting for a Sustainable America, we have served as a hub for information. We have spent as much time referring inquiries to other experts, sources of information, and the like, as we do directly providing information.

ORGANIZATION OF THIS REPORT AND KEY FINDINGS

Each chapter of this report corresponds to one of the substantive policy areas the President asked us to consider. The introduction establishes the context and illuminates some of the cross-cutting lessons, findings, and recommendations that inform much of our work and may also assist the thousands of people working on sustainability around the country.

We approached each policy area differently. For our work on environmental management and metropolitan and rural strategies, the Council had a foundation of previous work. Previous task forces had explored these subjects in some detail; thus the Council sought to build on this wealth of previous work and advance critical issues. For climate change and international leadership, particularly international capital flows, this report is the first time we have directly addressed these issues in detail. The depth and nature of the recommendations we offer consequently vary for each subject. The appendices supplement the text with additional detail, examples, and explanation of the people, meetings, and events the Council convened to prepare this report.

CLIMATE CHANGE (CHAPTER 2)

We agreed on a set of principles to guide overall U.S. climate policy. With an accord on principles, we (1) concluded that climate protection policies should be fundamentally linked to any national agenda for economic growth, environmental protection, and social justice; (2) developed principles for an incentive-based program and voluntary early action to reduce greenhouse gas emissions; (3)

agreed on policies to spur the rapid development and deployment of climate-friendly technologies in the next 10 to 15 years; and (4) recommended many climate protection strategies that offer multiple benefits by helping solve other social, economic, and environmental problems, creating global opportunities, and meeting the needs of current and future generations.

ENVIRONMENTAL MANAGEMENT (CHAPTER 3)

Our work on environmental management builds on the earlier efforts of the Council⁵ and others to make the existing system more effective, flexible, and accountable. We recognize that we are reaping some benefits and learning a great deal from existing reform efforts, but that most of these reforms are not designed to promote sustainable development. This report begins to answer the question, “What would environmental management look like if we did address sustainable development?” We identify the attributes of an environmental management framework designed for sustainable development and recommend the critical steps that can move the existing environmental management framework towards one that is more sustainable.

We concluded that moving the environmental management system into the 21st century requires a broader understanding of the nature, source, and linkage of environmental problems and a recasting of potential solutions. The system must be goal-, performance-, and information-driven; be attuned to natural ecological cycles; incorporate the values of community and place; and be sensitive to variations in the business sector and changes in the economy. Moreover, it must continue to refine traditional tools of environmental management, while encouraging the development of new tools and collaborative strategies.

METROPOLITAN AND RURAL STRATEGIES FOR SUSTAINABLE COMMUNITIES (CHAPTER 4)

Sustainable and livable community concepts have become mainstream, and communities all across the country are implementing innovative initiatives and projects. However, many existing efforts face technical, financial, and institutional obstacles; and it is difficult to nurture new ideas and pilot programs so they gain wider acceptance and use. We addressed a fundamental question: “What will it take to help sustainable and livable community initiatives ‘get over the hump’ from inspiration to implementation?” In our view, the principles needed for greater success have not yet

become the way America's communities do business and need to be applied more widely. We also agree that concerted and coordinated investment in five community development areas — green infrastructure, land use and development, community revitalization and reinvestment, rural enterprise and community development, and materials reuse and resource efficiency — could make a substantial difference.

Finally, we agreed that three types of tools are critical to overcoming major implementation obstacles: information and technical assistance, economic incentives and financial assistance, and local capacity and partnerships. This report recommends specific actions that will make these tools more widely available and increase their use.

INTERNATIONAL (CHAPTER 5)

In our earlier work, we identified key international sustainable development issues and the importance of leadership for the United States. In our current effort, we examined — among other things — how international private capital flows affect sustainable development, particularly investments in developing countries. We also reached out to other national councils on sustainable development with the goal of strengthening this important international network.

We concluded that (1) the United States must use its leadership role to help chart a path towards sustainable development both at home and abroad; (2) champions from all sectors are required for change to occur; (3) multilateral agreements should recognize and address economic, environmental, and equity considerations together; (4) foreign investment, assistance, and all government activities should be progressively and consistently conducted in ways that promote recipient countries' efforts to achieve sustainable development; and (5) the Council, or a similar body, should continue as a forum for thoughtful consideration of sustainable development issues by high-level leaders in all sectors.

USE OF THIS REPORT AND RELATIONSHIP TO EARLIER WORK

We hope this report help lights the path to a more sustainable America, and continues to move us from idea to action. It is based on the premise that sustainability requires persistence in its pursuit. The report therefore recommends actions that can move us immediately in a more sustainable direction and provides concrete examples of successes and innovations in all sectors of society. We hope this report inspires and guides the efforts of countless people and organizations as they take steps towards a better future. Much of what we recommend can and should begin immediately, will take years to put in place, and must involve the work of innumerable people and organizations.

As the President requested in our most recent charter, we addressed a narrower set of issues in this report than we did in *Sustainable America* (1996). Where this report probes topics previously addressed in *Sustainable America* (such as environmental management reform and sustainable communities), it complements that work by incorporating recent experiences and making more specific recommendations. In *Sustainable America*, the Council spoke to other important sustainable development issues and subjects including:

- National goals for sustainable development,
- Definition of sustainable development,
- Information and education,
- Natural resource stewardship,
- U.S. population and sustainability (including consumption), and
- International leadership (more generally).

We remain committed to our original recommendations, and refer interested readers to this report for the Council's views on these topics. The report may be found electronically on our Website.

CROSS-CUTTING LESSONS

Each chapter of this report is designed to stand on its own. Nevertheless, we found several compelling, cross-cutting ideas. Many of these concepts emerged initially in *Sustainable America*. The fact that they recrystallized during our current effort is significant. It demonstrates that these ideas form the building blocks for a

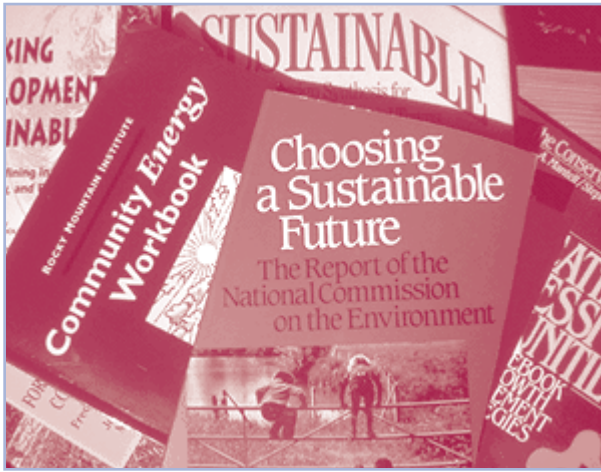


Photo: Center of Excellence for Sustainable Development.

sustainable future.

The Council's recent experience reaffirms our view that collaboration, stewardship, and individual responsibility are cornerstones of the path to a more sustainable America. By bringing diverse interests together, we can build the durable coalitions of common beliefs and values needed for a better future. By following the "intuitive and essentially moral commitment Americans have to preserving Earth's beauty and productivity for future generations,"⁶ we can create a stewardship ethic as our guide. If we "make choices on the basis of a broader, longer view of self-interest. . . get involved in turning those choices into action; and. . . be held accountable for [our] actions,"⁷ we can foster individual responsibility. By working together, we can achieve economic growth, environmental protection, and social justice for ourselves and our children.

In all of our work, we saw connections between the specific policy issues we were asked to study. We learned, for example, that community development decisions affect greenhouse gas emissions, just as reducing greenhouse gas emissions affects community development. Similarly, we learned that an environmental management system designed to create incentives for sustainable development would also provide incentives for reducing greenhouse gas emissions and increasing community reinvestment. A more sustainable future requires all of us, as individuals and institutions, to look for these types of connections wherever we can, because they are the foundation of new coalitions of interests that can lead to meaningful progress.

We also see a convergence of problem-solving strategies. Every chapter of the report demonstrates the impor-

tance of the linkages between community, environmental, and economic problems and the need to find integrated solutions to these connected problems. We see old approaches designed to solve one problem at a time giving way to new policies designed to solve several problems at the same time. Each chapter recognizes that community, economic, health, and technology-based strategies are needed to create the synergies required for success.

One measure of success for the future, we believe, is the extent to which we find, test, and implement more of these integrated, cross-cutting strategies. Pursuit of these opportunities is one of the most exciting and promising outcomes of our work.

Capacity building is a fundamental cross-cutting concept and an important step towards sustainable development. Many great ideas languish too long before becoming mainstream simply because people and institutions do not yet have the capacity to carry out these innovations. Improved capacity is a critical first step.

Information is critical to every area of sustainable development. Information helps us understand baseline conditions in the economy, the environment, and citizen health and welfare. We can chart a more direct course to a sustainable future if we agree where we have been, where we want to go, and what metrics could tell us whether we got there. The use and collection of information is important to each policy area we explored.

Partnership is another central theme. We can accomplish much more working together than we can acting alone. We need to build on existing collaborations to create formal and informal partnerships that can be institutionalized and productive over time.

Finally, making markets work for sustainability is critical. Innovative programs to address community, environmental, and social challenges explicitly harness the power and incentives of financial markets. For example, in environmental management reform, better accounting systems that incorporate the environmental benefits and costs of business decisions are a growing phenomenon. Equally exciting are businesses learning how to explain their environmental strategies in the financial terms that Wall Street can understand and reward. Both examples show how we can find more ways of "doing well by doing good." Location efficiency, an idea explained more fully in chapter 4, captures the unrealized economic advantages of living close to mass transit, one's workplace, or local amenities such as shopping. Institutions are being created to help



Pomegranate Center, through their “Community Gathering Places” program, spearheads projects to reinvest communities in their physical places. The Salisban Gathering Place was designed and built with the input and labor of over 200 volunteers of all ages from a culturally diverse community representing the languages of 23 nations and their respective customs and aesthetic sensibilities. The shelter’s posts are inlaid with recycled copper, and the gathering circle is made from materials reclaimed from historic Tacoma, Washington.

Photo: Pomegranate Center for Community Innovation, Issaquah, Washington.

ance will be needed if we are to meet these local, national, and global challenges.

businesses and citizens realize the economic value of saving energy. In our view, we have just begun to tap the opportunities of using markets to drive sustainable development.

Recent efforts at building community-based decision-making capacity suggest that dramatic progress is eminent. The Metropolitan Initiative, a partnership of the Center for Neighborhood Technology and leading philanthropic organizations growing directly out of the Council’s work in 1997, sponsored 12 forums⁸ in major metropolitan areas among community leaders to foster regional strategies and more productive relationships between metropolitan areas and the federal government. The National Association of Regional Councils, an association of community-based regional decision-making organizations, recently began a long-term initiative to promote regional cooperation. The National Academy of Public Administration has begun its own effort to advance better regional decisions. The Council fully expects this momentum to continue to build in the future.

As we finish our work developing policy recommendations, we are heartened by the belief that sustainable development is alive and well in America. We present this report to the President knowing that the challenges to improve our quality of life are as great as ever. But as we said three years ago, “We view this challenge with considerable optimism. . . . But optimism is not complacency.” Vigilance and persever-

C H A P T E R 2

CLIMATE CHANGE

NEXT STEPS

Initiatives in many sectors suggest that dramatic progress on sustainable development is now possible. One example is the National Town Meeting for a Sustainable America in Detroit, Michigan, and points across America on May 2-5, 1999, sponsored by the Council and its partners.⁹ This event and others like it will have used the ideas in this report and those from tens of thousands of Americans who are joining together with us to demonstrate the building blocks to make America a

“Advise the President on domestic implementation of policy options to reduce greenhouse gas emissions. The Council should not debate the science of global warming, but should instead focus on the implementation of national and local greenhouse gas reduction policies and activities, and adaptations in the U.S. economy and society that maximize societal benefits, minimize economic impacts, and are consistent with U.S. international agreements.”

— *PCSD Charter*, April 1997

more sustainable, livable place. We believe that the principle of sustainable development is clearly taking hold in the United States, judging from the success of these recent events. Our hope is for people all across America to use this momentum to advance important issues in their own communities.

In June 1999, the month after the National Town Meeting, the Council’s charter from the President will have expired. For six years, the Council has worked to build the foundation for a more sustainable future and served a variety of valuable, interrelated, and unique roles — as a unique presidential blue ribbon panel addressing economic, environmental and social issues, as a representation of the U.S. commitment to sustainable development, and as a symbol of the international importance of sustainable development. For these reasons, we recom-

mend to the President that he:

- Continue to promote sustainable development as part of his policy agenda.
- Continue to support integration of sustainable development into federal programs.
- Support the continuation of a sustainable development council or another body as a forum for thoughtful consideration of sustainable development issues by high-level leaders in all sectors. Whatever organization is created to carry forward this important work should have adequate public and private support and resources to perform its duties.

The risk of accelerated climate change in the next century has emerged as one of the most important issues we will face as we seek to achieve our sustainable development goals.

KEY FINDINGS - CLIMATE CHANGE

- Climate protection policy should be fundamentally linked to any national agenda for economic growth, environmental protection, and social justice. If we are to achieve all of these goals together, climate change must be drawn onto the roadmap for the achievement of our other national aspirations.
- We urge timely action to reduce the risks of climate change. Incentives for early action, international agreements, accountability, flexibility, broad-based measures to encourage technology, and fairness are essential in any climate mitigation strategy.
- Many actions that protect the climate have multiple benefits. Actions to protect the climate can help solve other social, economic, and environmental issues; benefit society; create global opportunities; and meet the needs of current and future generations.
- An incentive-based program is essential in catalyzing voluntary early action to reduce overall greenhouse gas emissions. The program should include broadly based participation; encourage learning, innovation, flexibility, and experimentation; grant formal credit and other incentives for legitimate and verifiable measures to protect the climate; ensure accountability; be compatible with other climate protection strategies and environmental goals; and be inspired by government leadership.
- Climate-friendly technology will play a critical role as we strive to achieve reduced greenhouse gas emissions as well as our other sustainable development goals. Rapid deployment of existing technologies and continued investment in research and development are essential elements of any strategy that aims to help the United States and the rest of the world reduce greenhouse gas emissions and protect the climate. Because greenhouse gases are released from sources both small and large, stationary and mobile, throughout the economy, a broad and diverse policy portfolio to develop and disseminate climate-friendly technologies rapidly is critical.
- Consensus building, outreach, and inclusive approaches are essential components of sustainable climate action.

INTRODUCTION

The United States cannot ignore the risk of climate change in the next century as it seeks to achieve sustainable development. Although the challenges of taking action are significant, failure to act could mean that we miss opportunities to improve our quality of life. We can benefit from protecting the climate as we strive to achieve economic growth, environmental protection, and social justice for ourselves without compromising the ability of future generations to meet their own needs.

In its work on climate change, the Council benefited from the wealth of available scientific research, technical and economic studies, and policy analysis that is available. Rather than focus on the entire range of issues that emerge when considering climate change, the Council

Climate includes averages and extremes of rainfall, snowfall, temperature, winds and storms, and ocean currents. Climate is not just the magnitude or number of events we experience, but when they happen as well. The productivity of farms, fisheries, and forests; the livability of our cities in summer and winter; the distributions and abundance of species; and the geography of disease all depend on climate.

focused on policies and actions that could reduce overall greenhouse gas emissions in ways that maximize societal benefits, minimize economic impacts, and are consistent with U.S. international agreements. The Council reached agreement on a set of principles for climate policy and focused on developing consensus recommendations in three key areas:

- An incentive-based and voluntary early action program to reduce greenhouse gas emissions,
- Policies to encourage the rapid development and deployment of climate-friendly technologies in the next 10 to 15 years, and
- Strategies to realize the broader benefits and global opportunities of climate change mitigation strategies.

The set of actions recommended in this chapter comprises nonproscriptive guidance about ways everyone — small and large businesses, nongovernmental organizations, individuals, communities, and local, state, and federal governments — can reduce the risk of climate change while helping the United States achieve sustainable development.

PRINCIPLES FOR CLIMATE PROTECTION STRATEGIES

To understand how climate change might affect us in the next century, the Council began with an examination of what is known and what is still uncertain about the nature and consequences of change in the global climate. The Council also sought to understand the economics of the climate issue; the technological challenges and opportunities; and the links between the global, national, and local actions needed to begin to address the problem.

The Council integrated these lessons into a set of climate principles that served as the basis for its deliberations on an incentive-based program to achieve voluntary and early reductions of greenhouse gas emissions, climate-friendly technologies, and the broader benefits and global opportunities of climate change mitigation strategies. In this effort, the merits of individual scientific studies were not weighed, nor were the overall costs and benefits of climate protection policies estimated. Rather, the Council acknowledged the risks of climate change and focused on developing recommendations that could reduce greenhouse gas emissions in ways that are consistent with national aspirations for economic growth, social justice, and environmental protection.

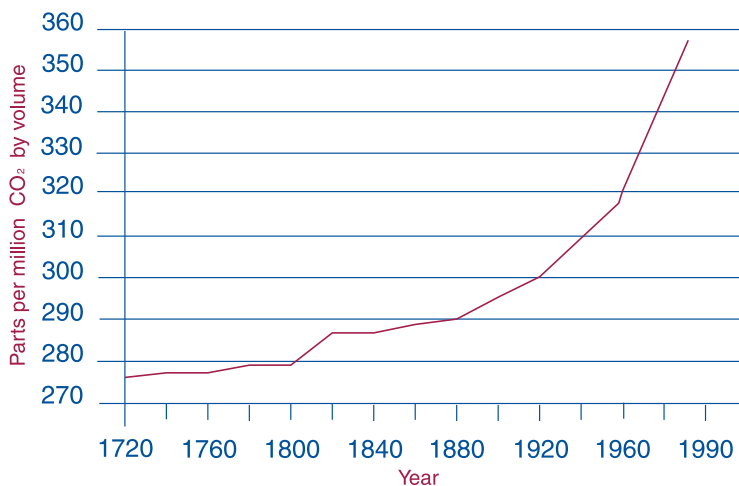


Figure 1. Global carbon dioxide concentration has increased over time.

Source: World Resources Institute.

GROWING CONCERNS THAT GREENHOUSE GAS EMISSIONS COULD IMPEDE PROGRESS TOWARDS A SUSTAINABLE FUTURE

The possibility of change in the climate system is a concern because many aspects of human society rely on a stable climate. Most human infrastructure and institutions — where to build, where to live, what to leave untouched — assume that past patterns of temperature, precipitation, storm frequency and severity, and sea level are a reasonable surrogate for the future.

After decades of research, an increasing amount of evidence suggests that human emissions of heat-trapping greenhouse gases, including carbon dioxide, methane, and nitrous oxide, may be altering the natural rhythm of climate variability.¹ Atmospheric concentrations of these gases have increased over the last century in near lock-step with industrialization and rapid population growth. Figure 1 shows the trend for carbon dioxide; trends for the other trace gases are similar. Every year, more greenhouse gases are released into the atmosphere through the combustion of fossil fuels, land use changes, deforestation, and other activities than can be absorbed or destroyed by natural processes.

Many greenhouse gases stay in the atmosphere for decades to centuries.² Because of the gases' long atmospheric lifetime, both their concentrations and the rate at which those concentrations increase are important factors in determining the risk of climate change: the effects of today's emissions on climate literally could be felt for gen-

erations to come.

Computer models used by the Intergovernmental Panel on Climate Change in its 1995 assessment report predict an average global warming of 1° to 3.5°C (1.8° to 6.5°F) by the year 2100 if emissions of greenhouse gases go unabated.³ The panel predicts that higher average temperatures and resulting changes in precipitation patterns, sea level, and ecosystems may have significant consequences. The local effects of this global phenomenon remain uncertain because of limitations in the models. Based on the body of emerging science on the regional impacts of climate change, beneficial and damaging effects could vary by region, and some sectors will gain new advantages and others be adversely affected.⁴ In addition, the possibility of “surprises” — unanticipated, rapid, and nonlinear changes in the climate system that could have significant impacts — cannot be ruled out given current scientific understanding.⁵

The potential for climate change in the next century as a result of human activity poses particular challenges to our ability to achieve sustainable development. To address this growing concern, nations of the world have set in motion ambitious plans to protect the climate. Led by then-President George Bush, the United States joined over 170 other countries in signing the UN Framework Convention on Climate Change, negotiated at the 1992 Earth Summit in Rio de Janeiro. The objective of the convention is to:

achieve. . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food

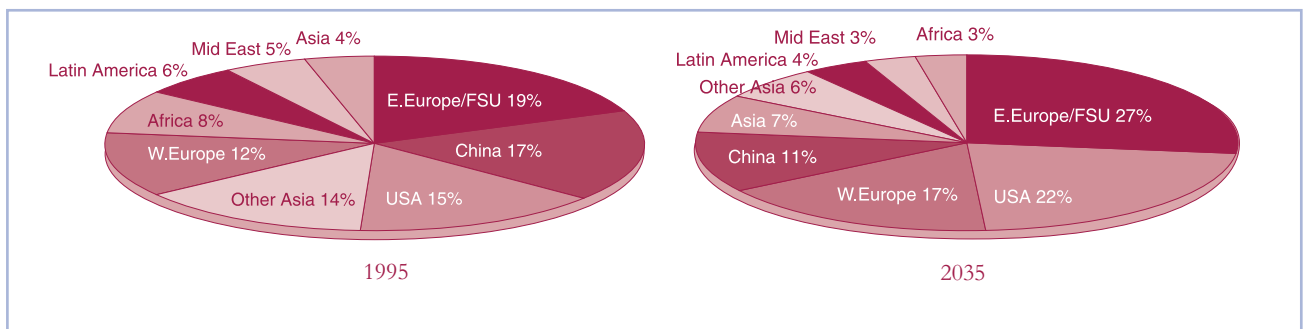


Figure 2. Total World Emissions Increase Over Time. In 1995, 6.46 billion tons CO₂ released; by 2035, project 11.71 billion tons.

Source: Office of Science and Technology Policy.

PRINCIPLES FOR CLIMATE POLICY

1. The Need for Action.

The risk of climate change caused by human actions and the potential for serious impacts to nature and human well-being is of sufficient concern that timely and effective actions should be taken to reduce those risks.

2. Incentives for Early Action.

Greenhouse gases have atmospheric lifetimes ranging from decades to over a century, and both the concentration and the rate of increase of these gases in the atmosphere are important factors in determining the risk of climate change. Therefore, policies to reduce emissions of greenhouse gases and other measures to protect the climate should include incentives for early action.

3. Clear Commitments, Predictable Results, and Flexible Implementation.

Global climate change policies should be based on national commitments and accountability to produce predictable results and should allow emissions sources to select their own strategies. U.S. policies to address climate change should be based on the integration of environmental, economic, and social goals.

4. Development and Dissemination of Improved Technologies.

To protect the climate cost effectively, technology breakthroughs, technology incentives, and the elimination of barriers for the deployment of existing technologies are needed. Broad-based cooperative programs to stimulate markets and develop and disseminate new and existing technology to industrialized and developing countries must be a high priority.

5. Fairness.

Climate change is a global issue and requires a global response. The U.S. response should include policies that maintain and foster the competitiveness of U.S. business; stimulate opportunities for all; and avoid approaches that place an unreasonable burden on lower income individuals, particular sectors, or future generations.

The President's Council on Sustainable Development Climate Change Task Force agreed to these principles and reported them to the President in November 1997.

Sustainable development provides a constructive framework for considering climate change.

production is not threatened, and to enable economic development to proceed in a sustainable manner.⁶

As a first step, both developed and developing nations pledged to take steps to protect the climate “on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.”⁷ Industrialized nations also voluntarily aimed to return their level of greenhouse gas emissions in the year 2000 to the level released in 1990.⁸ The United States was one of the first nations to ratify the convention.

Recent international agreements seek to build on exist-

ing commitments to achieve the convention's objective. The 1997 Kyoto Protocol commits all nations to continue efforts to protect the climate. If the protocol enters into force and becomes a binding agreement among nations, industrialized nations would be required to reduce overall aggregate emissions of six greenhouse gases⁹ by at least 5 percent below 1990 levels in the 2008-12 time period; the U.S. obligation would be set at 7 percent below 1990 levels.¹⁰ Developing countries would not be obligated to reduce greenhouse gas emissions by a specified amount. Programs such as emissions trading, joint implementation, and the Clean Development Mechanism (CDM) are intended to provide flexibility to achieve these reductions both at home and abroad.¹¹ To date, 84 nations, including the United States, have signed the protocol, and seven nations have ratified it, none of which is a large emitter of greenhouse gases.¹²

LEADERSHIP BY

INDUSTRIALIZED NATIONS IS NECESSARY

The United States contributes about 22 percent of global annual greenhouse gas emissions, with a per capita emissions rate higher than that of any other industrialized country.¹³ In the future, emissions from the developing world will increase rapidly as their economies grow; atmospheric concentrations of greenhouse gases will rise as a result. Without change, emissions from developing nations will surpass those from industrial nations (figure 2).¹⁴

Although the United States is currently the world's largest emitter, it cannot solve the potential problems associated with climate change alone. Even if all industrialized nations reduced their greenhouse gas emissions, atmospheric concentrations would continue to rise as a result of increasing emissions from the developing world. But it is also clear that industrialized nations must show leadership to demonstrate the feasibility and benefits of a different development path.

SUSTAINABLE DEVELOPMENT AFFORDS A CONSTRUCTIVE FRAMEWORK

Although the predicted impacts of climate change might not appear for decades, reducing greenhouse gas emissions means we would have to change many of the ways we pro-

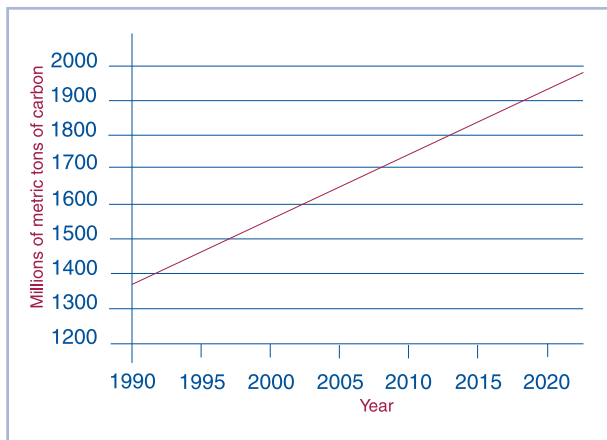
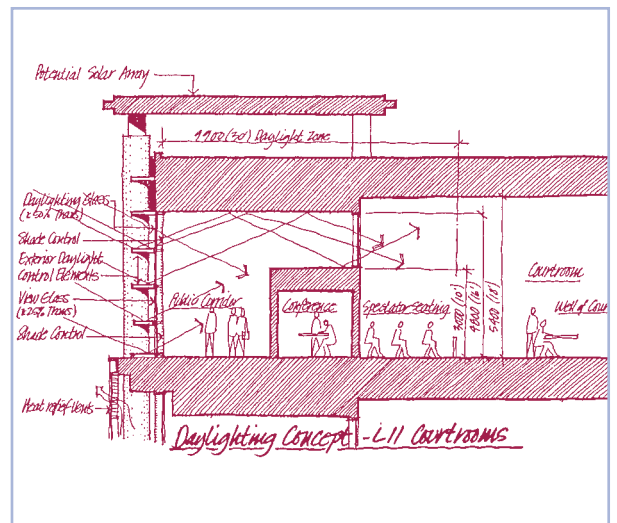


Figure 3. Projected U.S. CO₂ emissions from fossil fuel combustion without change in energy use patterns.

duce electricity, get to work, build our homes, and manufacture products. These changes would pose many challenges and opportunities. Some argue that we should wait for more scientific certainty before acting because the costs of retooling the world economy are significant. Others argue that we have already waited too long to avoid some costly impacts of a warming world and that climate protection will yield economic as well as environmental benefits.

Sustainable development provides a constructive framework for considering climate change. Both the potential impacts of a changing climate and strategies to reduce greenhouse gas emissions will unfold over many decades. Consequently, policy choices made over the next 10 to 15 years will have a lasting impact on future generations. In addition, the amount of energy used to create a good or service and the amount of greenhouse gases emitted as a result are fundamental measures of our progress towards sustainable development. Cost-effective approaches that increase energy efficiency and reduce greenhouse gas emissions could help reduce energy costs to consumers, result in fewer environmental impacts from pollution and waste, increase international competitiveness, and create new economic opportunities in many industrial sectors.



The new U.S. courthouse in Denver, Colorado, will incorporate sustainable design principles. In addition to photovoltaic cells on the roof, the structure is designed to maximize natural light to reduce or in some cases eliminate the need for lighting during daylight hours.

Sketch: Anderson Mason Dale and Hellmuth, Obata & Kassabaum, Inc., courtesy of U.S. Government General Services Administration-Denver Regional Center.



Bluffview Elementary School in Worthington, Ohio, is the first school to participate in the Solar School Project, an initiative of American Electric Power, the Foundation for Environmental Education, BP Solar, and other partners. Everyone worked together to put the 30 panels on the steel support structures and wire them together. Students can use the Internet to monitor electricity generation from the array and the school's energy consumption.

Photo: American Electric Power.

To guide its deliberations, the Council developed a set of climate principles that recognize that policies to protect the climate could help achieve sustainable development goals. These principles served as a framework for the Council's policy recommendations to reduce greenhouse gas emissions in ways that are consistent with national aspirations for economic growth, social justice, and environmental protection for current and future generations.

Greenhouse gases have atmospheric lifetimes ranging from decades to over a century, and both the concentration and the rate of increase of these gases in the atmosphere are important factors in determining the risk of climate change. Therefore, policies to reduce emissions of greenhouse gases and other measures to protect the climate should include incentives for early action.

SOONER IS BETTER: INCENTIVES FOR EARLY ACTION

Atmospheric concentrations of greenhouse gases increased rapidly over the last century (figure 1) because our emissions of these gases overwhelmed the ability of natural systems to absorb or destroy them. As noted earlier, the United States in 1993 pledged to return its level of greenhouse gas emissions in the year 2000 to the level released in 1990.¹⁵ Despite an ambitious program of voluntary action,¹⁶ the United States will not meet this goal. If the country does not change its patterns of energy consumption, U.S. greenhouse gas emissions could be more

Without incentives, some businesses and communities are concerned that if they take voluntary steps to protect the climate today, they could be penalized by having to achieve the same level of emissions reductions in the future as those that did not act. As a result, opportunities to make cost-effective emissions reductions may be missed, and achieving goals could become an even greater challenge.

than 30 percent above 1990 levels by 2010, and more than 45 percent above the benchmark by 2020 (figure 3).¹⁷ Without additional and timely action to reduce greenhouse gas emissions, the nation might have to make abrupt changes in its patterns of energy use sometime in the future. In addition, opportunities to save money, create jobs, and improve our quality of life could be missed by failing to act early.

Slowing the buildup of greenhouse gases in the atmosphere is an essential first step in restraining some of the potential impacts of rapid climate change and can help the United States meet any future limit on greenhouse emissions cost effectively. Incentives for early action could encourage the development of new and innovative ways to reduce, avoid, or sequester emissions at the same time the benefits of using energy in smarter ways are realized.

AN INCENTIVE-BASED EARLY ACTION PROGRAM

- 1. Appropriate Incentives for Early Action to Protect the Climate.** An early action strategy should aim to reduce greenhouse gas emissions. Any program should ensure that those that take or have taken voluntary steps to protect the climate are rewarded and not inadvertently penalized for their efforts. Market-based incentives, fiscal policies, federal funding, procurement policies, regulations, and public recognition should be combined into a coherent effort that effectively stimulates early action.
- 2. Broadly Based Participation.** Incentives for early action should encourage activities that protect the climate with the broadest possible level of participation by businesses, communities, government agencies, academia, nongovernmental organizations, and individuals. These incentives should facilitate the formation of partnerships and the leveraging of resources among participants.
- 3. Learning, Innovation, Flexibility, and Experimentation.** The program should accommodate economic growth while contributing to the achievement of significant emissions reductions by encouraging flexibility, innovation, and experimentation to facilitate learning about cost-effective ways to protect the climate. Policy should allow a broad menu of options that can also result in environmental and societal benefits for all segments of the population.
- 4. Formal Credit for Greenhouse Gas Emissions Reduction Efforts.** As part of the overall early action strategy, formal credit should be granted to early actors for legitimate and verifiable measures that reduce overall greenhouse gas emissions relative to defined benchmarks. Those undertaking these efforts should receive assurances that earned credits can be applied towards future reduction obligations. The program ultimately needs to be codified to provide certainty to these actors. Formal credit for domestic actions should be issued with the understanding that these credits are allocated from any future limit on U.S. emissions.
- 5. Accountability for Emissions.** Dependable measurement techniques and credible reporting methods should be used to account for claimed emissions reductions. Policies to grant formal credit should aim to keep transaction costs and risks low while ensuring the integrity of awarded credits.
- 6. Compatibility With Other Climate Protection Strategies and Environmental Goals.** The design of an early action program should be compatible with other domestic or international strategies to protect the climate and with other environmental goals.
- 7. Government Leadership.** Governments should demonstrate leadership in an early action program by achieving significant greenhouse gas emissions reductions from their activities relative to their defined benchmarks.

The President's Council on Sustainable Development Climate Change Task Force reached agreement on these principles and reported them to the President in October 1998.

BENEFITS OF EARLY ACTION

The greater the buildup of greenhouse gases in the atmosphere and the faster the rate of climate change, the less time ecological and socioeconomic systems will have to

adapt. Early action could help avoid some of these problems by slowing the buildup. By reducing these emissions, early action could provide opportunities to improve the livability of homes and communities, and increase the productivity and efficiency of businesses and governments.

Leveraging existing networks and partnerships at the community level could encourage everyone to learn about

and participate in innovative and flexible ways to protect the climate. For example, expanded home weatherization and energy-efficiency programs could help people use less energy to light, heat, and cool their homes. In some cases, upgraded lighting in residential buildings could reduce energy consumption by 53 percent compared to older systems.¹⁸ Not only would residents of energy-efficient homes save money on their energy bills and reduce air pollution, but they would also reduce greenhouse gas emissions.

Increased demand for climate-friendly technologies would boost job creation in this industrial sector and help the United States compete internationally in a rapidly growing global market for environmental protection.¹⁹ But transforming ideas and plans into reality takes time and money, and lead times are quickly evaporating if new technologies are to be deployed on a large scale in the next 10 to 15 years. By starting now, businesses can integrate climate concerns into their long-term business plans. As some financial institutions are already beginning to reassess and project the value of energy efficiency, renewable energy, technology, and environmental management in future markets, some businesses may gain a competitive advantage by acting early.²⁰

INCENTIVES CAN CATALYZE EARLY ACTION

Some businesses and communities are concerned that if they take voluntary steps to protect the climate today, they could be penalized by having to achieve the same level of emissions reductions in the future as those that did not act now. As a result of this uncertainty, opportunities to reduce emissions cost effectively may be missed — and meeting any emissions reductions goal could become an even greater challenge.

Incentives to reduce, avoid, or sequester emissions could help resolve this concern. One option would be to award credits to those that produce legitimate and verifiable emissions reductions below a certain level. Credits for early action would be allocated from any future limit on U.S. emissions, so that the United States would never exceed what it would be allowed to emit. Other incentives could spur early action more broadly, such as tax credits or grants for technology research, development, and deployment; tax deferral or deductions for early action initiatives; changes in government funding, procurement policies, and regulations; and public recognition of those entities that undertake early action.

PRINCIPLES FOR EARLY ACTION

The Council recommends an incentive-based early action program that includes broad participation; encourages learning, innovation, flexibility, and experimentation; grants formal credit for legitimate and verifiable measures to protect the climate; ensures accountability; is compatible with other climate protection strategies and environ-

To protect the climate cost effectively, technology breakthroughs, technology incentives, and the elimination of barriers for the deployment of existing technologies are needed. Broad-based cooperative programs to stimulate markets and develop and disseminate new and existing technology to industrialized and developing countries must be a high priority.

mental goals; and is inspired by government leadership. A systematic approach to broadly stimulate early action could facilitate voluntary efforts by businesses, governments, and consumers to protect the climate before any domestic or international binding requirements are in place. Although the award of formal credit has taken center stage in recent policy discussions,²¹ other incentives can also help catalyze broad participation.

An early action strategy must respond over time to advances in scientific knowledge and technology. Improved understanding of the climate system and accurate accounting of the sources and sinks of the various greenhouse gases can help inform how to target appropriate incentives to protect the climate. As we deploy existing technologies more rapidly and develop more technologies, new cost-effective early action strategies may emerge.

The benefits of early action justify the program on its own merits because it could improve economic performance and reduce local environmental pollution as well as greenhouse gas emissions. However, the Council recognizes that discussion of the value of an early action program has also become tied to the debate over the Kyoto Protocol. These principles do not presume a decision as to

whether the United States should become a party to the protocol, but they do allow for the possibility that the United States could agree to limit its greenhouse gas emissions in the future. An early action program that grants credits against any future limit on emissions could facilitate achievement of any binding agreement because it would create a powerful incentive for many emitters to get on a gradual “glide path” for emissions reductions.

TECHNOLOGY MATTERS

Climate-friendly technologies — those technologies that reduce, avoid, or sequester emissions of greenhouse gases — will play a critical role as we strive to protect the climate while the U.S. economy and global marketplace grow. Rapid deployment of existing technologies and continued investment in research, development, and commercialization of new climate-friendly technologies are essential if the United States and the rest of the world are to reduce greenhouse gas emissions cost effectively.²²

OVERCOMING CHALLENGES TO RAPID DEPLOYMENT OF TECHNOLOGY

The extent to which climate-friendly technologies help reduce greenhouse gas emissions will depend on how quickly and thoroughly they are adopted. By overcoming legal, fiscal, and policy barriers and impediments, the use of cost-effective technical advances can be accelerated. The Council believes the most significant impediments include:²³

1. High upfront cost of new technologies compared to the low cost of fossil energy.
2. Lack of awareness of the availability of climate-friendly technologies and their value in addressing other quality-of-life concerns.
3. Long time frame for natural turnover of capital stock.
4. Fiscal or regulatory policy disincentives that impede early retirement of carbon-intensive technologies or fail to encourage continuous improvement in technology and environmental performance.
5. Political uncertainty about future greenhouse gas control policy.

A SYSTEMATIC APPROACH TO ACCELERATE DEVELOPMENT AND DEPLOYMENT OF TECHNOLOGY

1. Fiscal policy should encourage the replacement of greenhouse gas-intensive technologies with those that are climate friendly and increase investment in innovation through performance-based incentives and other mechanisms.
2. Statutory and regulatory authority should facilitate flexible and performance-based approaches that provide incentives to install and employ climate-friendly technologies.
3. Voluntary commitments should be used to learn how to reduce emissions and put these lessons into practice.
4. Information dissemination should be accelerated to inform everyone about the availability and benefits of climate-friendly technologies.
5. Research, development, and deployment efforts should help ensure that future emissions reduc-

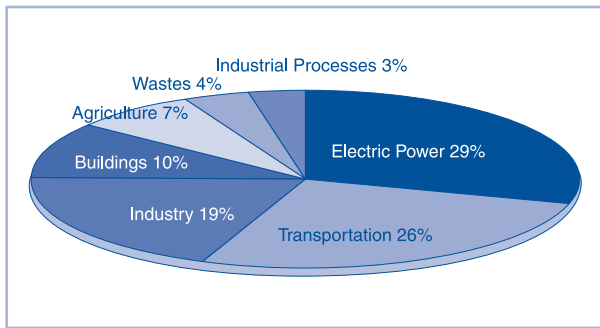


Figure 4. Sources of U.S. Greenhouse Gas Emissions in 1996. Total does not sum due to rounding. Source: Environmental Protection Agency.

Flexible and performance-based approaches can help remove these roadblocks and accelerate the deployment of technologies that are now available into the marketplace. However, realigning the regulatory structure, market forces, and fiscal policies to overcome the impediments has been a difficult task. Since few obvious or easy solutions have been proposed to remove the multiple impediments, approaches remain piecemeal, and the clearly identified problems remain. Unless existing impediments to technological innovation are overcome, significant differences will persist between the amount of emissions reductions that can be achieved cost effectively and actual performance.²⁴

A BROAD AND DIVERSE POLICY PORTFOLIO TO REALIZE THE MULTIPLE BENEFITS OF CLIMATE-FRIENDLY TECHNOLOGIES

In addition to the benefit of greenhouse gas reduction, adoption and development of energy efficiency improvements, renewable energy sources, low-carbon technologies, and other technological advances can stimulate economic growth, reduce environmental pollution, and improve U.S. energy security. Reduced reliance on petroleum can improve the U.S. balance of trade and make the nation less vulnerable to political instability in major oil-producing regions such as the Middle East. By using energy more efficiently, businesses and consumers can save money on energy costs. Technologies that emit less air pollution and fewer greenhouse gases can help achieve air quality goals as well as reduce the risk of climate change. Just as the effort to put a man on the moon made America a leader in space, so too

could reducing greenhouse gas emissions as the economy grows make the United States the world leader in environmental and energy technologies.

Many policies may incidentally raise or lower net U.S. greenhouse gas emissions by advancing or hindering the development and deployment of new technologies. With systematic approaches to promote the use of climate-friendly technologies, greenhouse gas emissions can be reduced as a “co-benefit” of other environmental, social, economic, and energy policy goals. A broad and diverse policy portfolio is needed to encourage the adoption of climate-friendly technologies and methodically address the myriad sources — small, large, stationary, and mobile — that emit or remove greenhouse gases from the atmosphere. The Council recommends a systematic approach that uses a variety of policy levers to spur the rapid diffusion of climate-friendly technology throughout the economy.

The impacts of human activity on the environment, including the climate, can be described as the combined influence of population, affluence, and technology.²⁵ Technologies that allow for the production of goods and services using fewer natural resources, fewer toxic materials, and less energy can help mitigate some of the environmental impacts — including greenhouse gas emissions — of a global population that grows in number and consumes more goods and services per capita each year. Technologies that help restore the environment while accommodating economic growth and improving the quality of life for everyone epitomize the goal for sustainable development.

Technology clearly will play an important role in reducing the risks of climate change. However, our past success in developing new and efficient ways of producing goods and services does not mean we need only wait for the right technologies to arrive to protect the climate. Such complacency may be overly optimistic. Moving new concepts to the marketplace is a time-consuming process. Efforts to commercialize new and deploy existing technology must be accelerated to reduce overall greenhouse gas emissions. Although a number of challenges must be overcome, the potential benefits for the economy, the environment, and society are significant. A broad and diverse policy portfolio can help the United States realize the mul-



multiple benefits of protecting the climate.

Recommendations

Understanding the sources of greenhouse gas emissions in the United States (figure 4) can help inform the design of a successful climate-friendly technology policy portfolio. In 1996, the United States emitted the equivalent of 1,788 million metric tons of carbon (MMTCE).²⁶ Over 81 percent of total greenhouse gas emissions came from four sectors of the economy, primarily through combustion of fossil fuels.²⁷ The electric power, transportation, industry, and buildings sectors accounted for almost 99 percent of carbon dioxide emissions and just under one-third of the nation's methane and nitrous oxide emissions that year.²⁸ Although not major emitters of carbon dioxide, the agriculture and forestry sectors are important because agricultural activities accounted for 66 percent of the methane and 66 percent of the nitrous oxide emissions, and because U.S. forests and soils removed some greenhouse gases from the atmosphere. Developing and deploying technologies that reduce, avoid, or sequester greenhouse gas emissions from these sectors are critical elements of U.S. climate policy.

Technology breakthroughs, new incentives, and the removal of impediments are needed to move climate-friendly technology into the U.S. agriculture, buildings, electric power, industry, and transportation sectors. For each of these sectors, the Council reached agreement on a set of actions that could accelerate the development and deployment of climate-friendly technology.

The recommendations presented here reflect con-

sensus among the Council's diverse membership and demonstrate that the nation could take many steps to encourage climate-friendly technology that have a broad base of support. In putting forth these actions, the Council did not estimate the amount of greenhouse gas emissions reductions that could be achieved by taking these steps, or assess the overall costs and benefits of doing so. Rather, the Council focused on actions that were consistent with efforts to achieve national aspirations for economic growth, environmental protection, and increased equity, and could:

- Overcome the roadblocks to technological innovation.
- Accelerate the development and diffusion of promising classes of climate-friendly technologies in the United States.
- Help reduce greenhouse emissions in the next 10 to 15 years.

Taken together, these recommendations would represent a solid course of action to spur climate-friendly technology and reduce U.S. greenhouse gas emissions.

ELECTRIC POWER

The type of fuel used to generate electricity has a significant effect on the amount of greenhouse gases emitted by the electric power sector. Coal, generally the cheapest source of fossil fuel, also emits the most air pollution and greenhouse gases per unit of energy. Natural gas combustion emits the least amount of greenhouse gas per unit of fossil energy. Currently, over 85 percent of electricity-related greenhouse gas emissions comes from coal-fired power plants.²⁹

Coal-fired power plants generate over half of U.S. electricity (52 percent); followed by nuclear (22 percent), natural gas (14 percent), and renewable energy sources (12 percent, predominantly conventional hydropower).³⁰ The industry is undergoing a shift in the sources of electricity generation as a result of electric power sector restructuring and environmental regulations, and as existing nuclear power plants reach the end of their planned lifetime. Fossil-fuel-powered plants are expected to generate about 80 percent of the U.S. electricity supply over the next 20 years as the existing stock of nuclear plants is phased out.

Greenhouse gas emissions from the electric power sector could be reduced by replacing or repowering existing coal-based power plants with combined-cycle natural



Using electric vehicles in regions that have cleaner sources of electricity generation such as Southern California can help reduce air pollution as well as greenhouse gas emissions.
Photo: General Motors Corporation.

gas facilities, converting existing coal-fired facilities to run on fuels that emit fewer greenhouse gases, employing combined heat and power technology in appropriate sites, using more renewable energy technology, and increasing the efficiency of existing plants as well as transmission and distribution systems.

Recommendations

1. Replace or convert carbon-intensive-generating technologies with low-carbon, carbon-free, or high-efficiency technologies such as combined-cycle natural gas, renewable sources, more advanced clean coal, and clean distributed generation in ways that ensure reliability of the electricity supply.
2. Enhance development, commercialization, and introduction of, and capital flow towards new climate-friendly technologies.
3. Enable and enhance markets for retail energy services that encourage energy efficiency and the use of low-carbon and carbon-free energy technologies.
4. Recognize the environmental characteristics of existing carbon-free power generation.

Action 1

Owners and operators of publicly and privately owned power projects should establish voluntary goals to reduce

greenhouse gas emissions from their facilities and implement a plan to meet them.

Action 2

Move towards improved environmental performance of power generation facilities, recognizing the efforts being made to attain health-based air quality standards and the need to reduce greenhouse gas emissions cost effectively while maintaining economic growth and reliable electric service, and avoiding unreasonable burdens on particular sectors or geographic regions.

Action 3

As part of restructuring legislation, permit demand-side management services currently provided by electric power utilities to be sold separately from other services so that value-added services such as energy efficiency and conservation can be offered for profit.

Action 4

States should establish a wire charge to encourage development and installation of cleaner energy systems as the electric power sector is restructured, recognizing that, as many large industrial facilities subject to global competition already make significant investments in energy efficiency as a business mainstay, incentive programs involving surcharges may not be warranted in all cases.

Action 5

Improve the information provided to consumers and sellers of power about the cost savings of energy efficiency and conservation, particularly in industrial settings and commercial buildings.

Action 6

Establish uniform requirements for disclosure of the environmental characteristics of power sources, and the amounts and types of air and other pollutants generated by these sources.

Action 7

Eliminate or lower grid exit fees for cleaner power sources used on site for small commercial or residential applications that fall below a *de minimis* standard of power generation.

Action 8

Develop a certification program for “green power” that takes into account the varying availability of renewable and

other clean power sources in different regions of the country. Electricity consumers should stimulate demand for clean energy products by purchasing certified green power.

Additional actions for this sector are listed on page 23.

T R A N S P O R T A T I O N

Fossil fuel combustion by passenger cars and light-duty trucks account for the majority of greenhouse gas emissions (58 percent) from the transportation sector; however, airplanes (13 percent), freight trucks (15 percent), and rail and marine (7 percent) are also responsible for a significant amount of emissions. Other sources make up the remaining 7 percent.³¹ The transportation sector is the second largest and is the fastest growing source of greenhouse gas emissions in the United States, due in large part to the continuing growth in vehicle-miles traveled, new fleet fuel economy levels that are not increasing, and growth in the relative proportion of light trucks. Significant growth in air travel also will contribute to increasing emissions from this sector.

A number of technologies could help lower greenhouse gas emissions from the transportation sector. Some of the more promising options include high-efficiency gasoline-powered engines for cars and light trucks; hybrid fuel and hybrid electric vehicles; high-efficiency diesel engines for heavy trucks, buses, and off-road equipment (e.g.; agricultural and construction); alternative fuels; fuel-cell-powered vehicles; new aircraft engine designs; modernized air traffic control technologies; systems to improve rail system efficiency; land use planning technologies; traffic management technology; and other technologies that help people travel less distance or less frequently.

R e c o m m e n d a t i o n s

1. Reduce greenhouse gas emissions from vehicles.
2. Accelerate development and use of cleaner fuels and engines.
3. Reduce vehicle-miles traveled.

A c t i o n 1

Government and businesses should accelerate efforts to procure clean fuel/engine fleet vehicles and fuel them in ways that result in real reductions of greenhouse gas emissions.

A c t i o n 2



Photo: Stephen Delaney, U.S. Environmental Protection Agency.

Establish consumer tax incentives for purchase of efficient, advanced technology vehicles.

A c t i o n 3

Establish new programs and strengthen existing policies that foster alternative transportation choices and provide an incentive to drive fewer miles including:

- a. Policies that encourage the use of mass transit such as tax benefits for employer-subsidized transit pass and parking cash-out programs.
- b. Credits or incentives for compact development.
- c. Policies that promote car-sharing programs such as those already established in Europe and the United States, which offer the potential to reduce greenhouse gas emissions by lowering the total number of vehicle trips and vehicle-miles traveled within major cities.
- d. Public education and outreach efforts to identify and promote the benefits of efficient vehicles and other transportation choices to stimulate demand for these technologies.
- e. Research on the impact of telecommuting, information technologies, and Internet commerce on reducing greenhouse gas emissions.

A c t i o n 4

Improve infrastructure for intermodal transportation (i.e., bike racks, bus shelters, train stations).

A c t i o n 5

States and localities should establish appropriate road pricing policies that reduce congestion, mitigate greenhouse gases, and mitigate any impact on low-income commuters.

Action 6

In cases where greenhouse gas reductions can be quantified and verified against credible benchmarks, give communities the opportunity to receive credit when they use community design to lower traffic by adopting zoning codes and other changes that encourage more efficient land use patterns to reduce pollution from motor vehicles.

Action 7

Increase and redirect existing support for research, development, and deployment and production of advanced vehicle components towards technologies that enable greater efficiency including hybrid electric systems, lightweight materials, clean engines, energy storage systems, and fuels.

Action 8

Support research to determine the potential of intelligent transportation systems (a group of technologies that could improve the flow of traffic through urban areas) to reduce greenhouse gas emissions.

Action 9

Prioritize and accelerate efforts to develop infrastructure for alternative-fueled vehicles that reduce greenhouse gas emissions.

Action 10

Perform additional research on how to reflect the number of vehicle-miles traveled as a variable cost of insurance so that drivers better understand the price associated with the number of miles they drive.

INDUSTRY

Industry is the most diverse of the end-use sectors, consisting of many activities — such as mining, manufacturing, pulp and paper processing, and construction — that are performed by businesses of every size. Individual subsectors have vastly different energy use patterns and emit varying amounts and types of greenhouse gases. In 1994, the seven most energy-intensive industrial subsectors were petroleum refining (26.4 percent of energy used by the sector), chemicals and allied products (24.7 percent), paper and allied products (14.8 percent), steel (9.1 percent), aluminum (1.6 percent), glass products (1.1 percent), and metal casting (0.9 percent).³² Most energy-related greenhouse gas emissions from this sector result from producing steam and process heat. In addition to emissions resulting from the combustion of fossil fuels, several primary industrial processes generate greenhouse gas emissions.

Emissions of greenhouse gases from this sector could be lowered using several types of technologies including those that increase energy efficiency, switch fuels, utilize combined heat and power, and improve industrial processes.

Recommendations

1. Replace or convert carbon-intensive industrial boilers, power-generating facilities, steam-generating systems, and industrial process equipment such as motors, pumps, and compressed air systems with low-carbon, carbon-free, or high-efficiency technologies that increase energy efficiency and lower greenhouse gas emissions from industrial processes.
2. Encourage design and manufacture of climate-friendly products and processes.
3. Encourage energy-efficient recycling of feedstocks, products, and waste streams.

Action 1

Establish a rebate program of limited duration for commercial, residential, and small manufacturing users of electric power to reduce the upfront costs of renewable energy technologies.

Action 2

Help communities that want to create eco-industrial parks by making relevant information available, allowing flexibility in permitting and other regulatory areas while ensuring that environmental goals are met or exceeded, and enacting mixed-use zoning that allows for eco-industrial parks that have low or zero emissions of greenhouse gases and other pollutants.



The Partnership for Advanced Technology in Housing aims to ensure that new homes of the future use 50 percent less energy than today's standard new home, and that the energy use in 20 percent of existing homes is reduced by 30 percent through retrofits.

Photo: U.S. Department of Housing and Urban Development.

Action 3

Offer incentives to encourage climate-friendly business development.

Action 4

Develop accounting systems that value the energy savings of buying efficient equipment.

Action 5

Develop methods to account for the greenhouse gas emissions avoided if new facilities employ climate-friendly technologies.

Additional actions for this sector are listed in the following section.

ACTIONS FOR THE ELECTRIC POWER AND INDUSTRY SECTORS

Both the Electric Power and Industry sectors use equipment to generate electricity and use energy to operate machinery and other equipment. A number of actions could help carry out the recommendations for each sector.

Action 1

Streamline the permitting process for new low-carbon or carbon-free generating facilities and related infrastructure in ways that preserve public comment and provide

accountability for performance. Relevant statutes that affect the Electric Power and Industry sectors include the Clean Air Act, the Clean Water Act, the National Environmental Policy Act, Federal Energy Regulatory Commission rules, and state environmental laws.

Action 2

Offer targeted temporary tax credits or incentives, low-interest revolving loan funds, matching grants, or other appropriate incentives or rewards to reduce the cost of installing climate-friendly power-generating technologies and related infrastructure.

Action 3

Improve the energy efficiency of equipment that uses electricity.

Action 4

Facilitate expansion of natural gas pipeline infrastructure and capacity and expand natural gas markets by streamlining duplicative and conflicting regulations, removing economic disincentives, and simplifying the permitting process in ways that preserve public comment and provide accountability for performance.

Action 5

Harmonize tax schedules for depreciation of new electric power-generating equipment and related infrastructure with the schedule for depreciation of other types of capital equipment to create an economic incentive to install climate-friendly electric power-generating equipment more frequently.

Action 6

In partnership with the private sector, government research should focus on improving scientific understanding and practical applications for the use of renewable energy and distributed energy technologies such as fuel cells and micro turbines.

BUILDINGS

The number, size, and geographic distribution of residential and commercial buildings — as well as the market penetration of heating and cooling technologies and major appliances — combine to influence the energy consumption and greenhouse gas emissions from the buildings sector. Residential buildings account for about 56 percent of emissions within this sector.³⁵ Among the more promising options for reducing emissions from the buildings sector are increased deployment of energy-efficiency



This Texas rancher uses a wind-powered turbine to pump water for his cattle.

Photo: American Wind Energy Association.

technologies and greater use of combined heat and power generation in commercial facilities.

Recommendations

1. Encourage retrofits of existing buildings to reduce greenhouse gas emissions through more efficient electricity and fuel use.
2. Encourage design and construction of new buildings that would reduce emissions in the construction phase and during the operation of the building in its lifetime.
3. Improve the efficiency of appliances and other products within the building.
4. Optimize building efficiency by integrating systems for their design, operation, and maintenance.

Action 1

Provide tax incentives or credits for installation of climate-friendly technologies.

Action 2

Adopt fiscal or regulatory policy incentives that encourage continuous improvement of codes and standards for buildings and appliances.

Action 3

Governments should consider offering temporary and targeted tax credits or incentives for new residential construction that exceeds building code energy-efficiency standards by at least 50 percent, and for retrofits of existing residential buildings that significantly improve building code energy-efficiency standards. Eligibility for these incentives or credits should include appropriate verification of the improvements against recognized benchmarks.

Action 4

Amplify government procurement practices to achieve greater use of energy-efficient materials and technologies in buildings.

Action 5

Build on existing efforts in local, state, and federal governments to promote energy efficiency by establishing goals for greenhouse gas emissions reductions from government-owned buildings and implement a plan to meet them.

Action 6

Build on existing awards, recognition, and assistance programs such as EnergyStar and Rebuild America to recognize leadership in achieving energy efficiency in buildings.³⁴

Action 7

Develop methods that allow industry and entrepreneurial consumers to aggregate greenhouse gas emissions reductions from the manufacture or use of more efficient appliances, and ensure that appropriate protocols to verify and quantify those reductions are available to facilitate participation in emissions trading.

Action 8

Develop methods to account for greenhouse gas emissions reductions if builders choose to construct homes that are more efficient than local standards. The methods should include appropriate protocols to verify and quantify those reductions against a credible benchmark.

Action 9

Provide information to consumers, builders, architects,

developers, materials producers, and others on the cost savings and climate benefits of energy efficiency and conservation.

Action 10

In partnership with the private sector, government research should improve scientific understanding and practical applications for the use of energy-efficient and renewable energy technologies in buildings.

Action 11

Recognize and document increases in worker productivity due to energy-efficiency improvements in buildings.

AGRICULTURE AND FORESTRY

Agricultural activities emit primarily methane and nitrous oxide.³⁵ Ruminant animals (65 percent) and manure management (30 percent) are the major sources of methane in this sector, followed by rice cultivation (~5 percent) and crop waste burning (0.4 percent). Application of fertilizers and other cropping practices account for almost 96 percent of the nitrous oxide emissions from this sector.³⁶ Within the United States, the direct effects of deforestation on greenhouse gas emissions are minor to none.³⁷

Technologies that improve land and resource management practices; improve energy efficiency on farms, forests, and rangelands; abate methane emissions from ruminant animals; and reduce nitrous oxide emissions from soils can help reduce greenhouse gas emissions.

The agriculture and forestry sectors can help the United States reduce emissions in other ways, as well. Biofuel crops could provide an alternative energy source. Carbon removed from the atmosphere during crop growth is returned when the crop is burned for energy. Although energy is required to produce and process the crop, biofuels may reduce overall greenhouse gas emissions compared to fossil fuels.

The two sectors also can help the United States meet its climate objectives if forest and soil management includes consideration of their potential to remove carbon dioxide from the atmosphere. Deforestation and land use changes in industrialized nations are historically important sources of greenhouse gas emissions, and clearing of tropical forests for agricultural use is currently a significant source of emissions globally. However, U.S. forests remove more carbon dioxide from the atmosphere each year than they release. In

1996, U.S. forests sequestered 171.3 MMTCE.³⁸ Removal of carbon by agricultural croplands could complement carbon sequestration by forests. One recent assessment found that farmlands could potentially sequester as much as 75 to 208 MMTCE per year if conservation programs were enhanced, degraded soils restored, tillage practices and crop residue management improved, and new cropping systems adopted.³⁹

Recommendations

1. Encourage opportunities to create alternative sources of fuel on farm, grazing, and forest lands.
2. Promote carbon sequestration on farm, grazing, and forest lands.
3. Reduce fossil energy requirements for farming, grazing, and forestry production processes.
4. Reduce greenhouse gas emissions from agricultural byproducts.

Action 1

Local, state, and federal governments; businesses; and individuals should identify among their own lands appropriate land restoration projects that could increase carbon sequestration.

Action 2

Focus agriculture research on renewable energy crop production, recycling of organic wastes, fertilizer use, and nutrient management.

Action 3

Focus forestry, crop lands, and grazing lands research on carbon sequestration, specifically measurement of carbon storage in forest and other ecosystems, certification and verification of carbon sequestration in forests and soils, monitoring of sequestration projects, and “leakage” issues related to carbon storage in forests. Link research efforts to support ongoing international efforts to manage forests sustainably, including the Montreal Process Criteria and Indicators for Sustainable Forest Management programs.

Action 4

Develop eco-efficient ways to capture energy from agricultural byproducts (i.e., crop waste and manure), including methane.⁴⁰

Action 5

Develop accurate and precise methods to quantify and

verify the amount of carbon sequestered in soils and forests as a result of changes in land use. If the potential for carbon sequestration is adequately demonstrated and reliable methods are developed, promote a more comprehensive treatment of land use practices in international agreements which includes appropriate credit for those practices that sequester carbon.

CROSS-CUTTING ACTIONS

Some climate technology issues go beyond sectoral boundaries. For example, exports of certain climate-friendly technologies can help lower their costs in the United States because businesses attain economies of scale for their production. Other cross-cutting issues focus on actions that could catalyze early adoption of climate-friendly technologies by all sectors and encourage systematic and sustainable approaches to land use planning and use of natural resources.

Recommendations

American cities and towns account for over 80 percent of national energy use. Land use planning and urban design affect about 70 percent of that, or 56 percent of the nation's total energy use.

1. Expand trade in cleaner technologies to stimulate domestic markets and transfer technologies to developing countries.
2. Encourage early action to adopt climate-friendly technologies.

3. Encourage systematic approaches to land use planning that promote reuse of materials and brownfields, reduce sprawl, and preserve greenspace.

Action 1

Support the development and deployment of systems and institutions that assemble information about available incentives and options to reduce greenhouse gas emissions to enable easier and more effective choices of climate-friendly technologies.

Action 2

Pursue export policies that foster cleaner infrastructure in less developed countries and stimulate opportunities for domestic manufacturers of climate-friendly technologies to lower the cost of their products through economies of scale. These policies should pay special attention to the sustainable development and climate protection needs of developing nations.

Action 3

Begin to move towards tax policies that — without increasing overall tax burdens — encourage employment and economic opportunity while discouraging environmentally damaging decisions.

Action 4

As an extension of previous studies on environmentally and economically damaging subsidies, and building on previous Council recommendations, establish a national commission to review the effect of federal tax and subsidy policies on the goal of climate protection. In *Sustainable America*, the Council recommended that this commission:

should review all existing tax and spending subsidies to determine if a national need remains to continue individual subsidies. . . [and] . . . should recommend to the President a list of subsidies that fail to meet this test and should be phased out or rapidly eliminated.

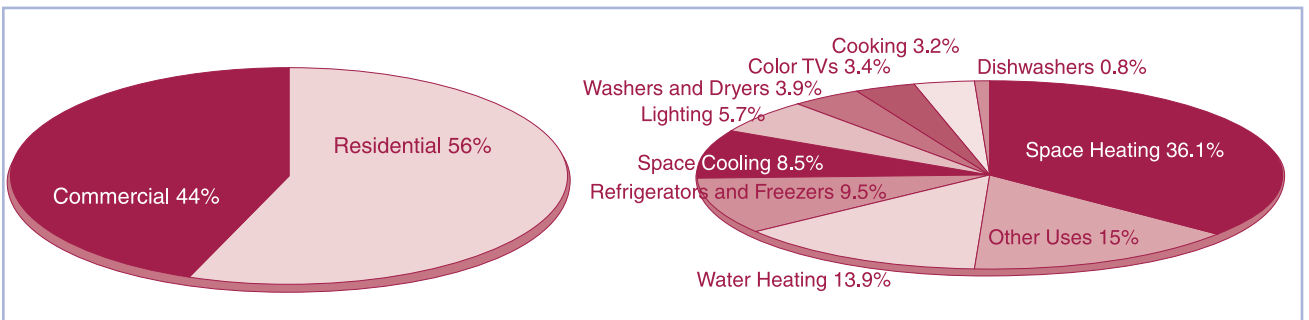


Figure 5. Emissions in the buildings sector (left) and uses of energy in residential buildings.
Source: Energy Information Agency.

UNDERSTANDING THE BENEFITS OF CLIMATE PROTECTION: PCSD FORUM ON COMMUNITIES AND CLIMATE CHANGE IN ATLANTA, GEORGIA

Together with local businesses, government, and nongovernmental organizations, PCSD convened a forum on Communities and Climate Change at its November 1997 public meeting. (The co-conveners of the forum were the Regional Business Council, Interface, Inc., Fulton County Commissioners, Atlanta Regional Commission, Emory University, Georgia Institute of Technology, Southface Energy Institute, the Natural Step, and the Georgia Conservancy.) The meeting's objectives were to:

- Make climate change “real” to the people of Atlanta;
- Connect current quality-of-life concerns in the region to the climate issue; and
- Explore relationships between solutions to quality-of-life concerns and climate mitigation.

After hearing briefings on climate change science, the potential impacts of climate change, the opportunity for technology to reduce emissions, and the estimated costs of greenhouse gas emissions reductions, the 150 forum participants broke into four groups focusing on work and economy, home and family, outdoors and recreation, and learning and education. Each group answered the following questions:

- What are the most important quality-of-life issues affecting the region?
- Are any related to climate change? If so, which ones and how are they related?
- Can you come up with solutions that solve multiple quality-of-life problems and address climate change at the same time?
- What do we need to do to make solutions happen?

Many common issues emerged from the breakout groups. These included traffic, land use and urban sprawl, lack of alternative transportation, availability and access to jobs, air quality, preservation of open space, and the need for urban revitalization.

The groups found many connections to their quality-of-life issues and climate change as well as linkages among their quality-of-life concerns. For example, many groups noted that urban sprawl results in the loss of carbon sequestration potential as well as increased vehicle travel. In addition, sprawl can destroy wildlife habitat and reduce availability of green space for recreation, increase travel distances which makes communities less accessible, contribute to increased flash-flooding and erosion, and incur significant costs for municipalities which must provide infrastructure and utilities to support new development.

Forum participants identified many solutions that could address their quality-of-life concerns and protect the climate:

- Preserving green space and trees could enhance carbon sequestration as well as provide more opportunities for recreation.
- Reducing government fragmentation would improve local land use planning as well as strengthen local democracy.
- Increasing funding for alternative transportation would help reduce vehicle travel and improve local air quality.
- Improving the quality and safety of urban school would create an incentive for families to stay in the city rather than move to the suburbs. This could avoid increasing emissions from vehicles, as city dwellers tend to drive less than their suburban counterparts.

Any remaining subsidies should be made subject to a sunset or review clause that would require the appropriate government agency to ensure on a regular basis that these subsidies are not inconsistent with national sustainable development goals.⁴¹

These goals should include climate protection. The Council also recommended that the commission “should conduct an explicit assessment of alternative tax policies

and...assess opportunities for increased use of pollution taxes while reducing reliance on more traditional income taxes.” The commission should make recommendations to the President and Congress on tax reform initiatives that are consistent with the goals of climate protection and sustainable development.

Action 5

Encourage aggregation of small customers and sources to increase market penetration of low-carbon power and facilitate participation in emissions trading.

Action 6

Offer an incentive-based early action program that encourages broad-based participation, learning, innovation, flexibility, and experimentation; grants formal credit for legitimate and verifiable measures to protect the climate; ensures accountability; is compatible with other climate protection strategies and environmental goals; and is inspired by government leadership.

Action 7

Encourage voluntary emissions trading to reduce greenhouse gas emissions and provide opportunities for businesses and communities to learn about emissions trading.

Action 8

Government should work individually and in partnership with businesses to improve scientific understanding of and practical applications for the use of energy-efficient and renewable energy technologies. Governments should complement their efforts to fund the development of new technologies with a serious commitment to help businesses that wish to commercialize the technology.

Action 9

Develop methods that allow small businesses, residential customers, and entrepreneurial consumers to measure and track their greenhouse gas emissions reductions efforts. Ensure that appropriate protocols and mechanisms to verify, quantify, and aggregate those reductions are available.

Action 10

The federal government should work with lenders and municipal bond underwriters to expand research on the costs and greenhouse gas emissions associated with urban sprawl and determine if objective measures could be established to assess them.

Action 11

Support government-industry partnerships to strengthen precommercial research and development efforts for new climate-friendly technologies.

SEEKING BROADER BENEFITS IN CLIMATE PROTECTION STRATEGIES

The predicted impacts of climate change could affect many segments of society, regions, and individuals, and could reduce their capacity to pursue a sustainable future. In meetings around the country, the Council heard from many citizens and community organizations about the importance of climate protection. A consistent thread in these presentations was that local areas can realize multiple benefits by reducing their greenhouse gas emissions. The Council also learned that the converse is true: climate protection is an important benefit of many strategies and actions that contribute to sustainable community development.



Advances in technology allow AT&T employees to telework from their home office, thereby providing individuals the opportunity to balance family and work, reducing pollutants associated with transportation, and enabling economic activity and increasing productivity.

Photo: AT&T.

SMALL SOURCES OF EMISSIONS AND COMMUNITIES ARE INTEGRAL PARTS OF ANY SOLUTION

Greenhouse gas emissions for each of the major sectors (figure 4) reflect the aggregation of many small sources

PUTTING CONCEPT INTO PRACTICE: CITIES FOR CLIMATE PROTECTION CAMPAIGN

Cities and municipalities worldwide are participating in the International Council on Local Environmental Initiatives (ICLEI) Cities for Climate Protection Campaign. Participating cities agree to inventory their sources of greenhouse gas emissions, set a target for emissions reductions, and develop and implement a plan to meet this.

Program participants choose an approach that works for their community. Actions taken by participating U.S. cities and municipalities include:

- Mitigating road and traffic congestion,
- Planting trees to cool urban areas and sequester carbon,
- Switching to renewable energy,
- Using alternative-fueled vehicles in municipal fleets,
- Using better urban planning techniques,
- Recovering methane from landfills,
- Community recycling programs,
- Retrofitting buildings with more energy-efficient technologies, and
- Parking cash-out programs.

As a result of these policies, the participants have noted a number of tangible “co-benefits” to their efforts to reduce greenhouse gas emissions:

- Increased energy efficiency lowers costs and keeps money in the community for more productive investments.
- Demand for energy-efficient products and services and for new technologies can create local jobs and boost the local economy.
- Less fossil fuel consumption reduces air pollution that can cause adverse public health impacts.
- Communities are more livable because they have reduced traffic congestion, cleaner air, more efficient and comfortable homes and offices, and land use patterns that help build a sense of place.
- Energy efficient schools can spend their cost savings on better educational programs.
- Manufacturing processes are more efficient, and workplaces are more productive, because of better lighting and air-flows.

Cumulative actions of the participating local governments can have a significant impact on the nation’s ability to meet its climate protection goals. ICLEI has calculated that if all 55 U.S. cities and municipalities participating in the program voluntarily reduce their greenhouse gas emissions 10 percent below 1990 levels, U.S. greenhouse gas emissions in total would be reduced by 145 million tons — 6.5 percent of the U.S. obligation under the Kyoto Protocol.

Source: ICLEI, U.S. Communities Acting to Protect the Climate: 1998 Achievements of ICLEI’s Cities for Climate Protection — U.S. (Berkeley, CA, 1998).

of greenhouse gases. For example, in the buildings sector, over half of the emissions come from residential buildings (figure 5).⁴² Examined in detail, it becomes clear that overall residential emissions result from millions of daily decisions and actions that consume energy and result in greenhouse gas emissions.

As population and economic centers, cities and metropolitan areas are major consumers of energy and emit-

ters of greenhouse gases. Local decisions significantly influence energy use, particularly in the buildings and transportation sectors. Policies made at the local level also affect overall U.S. greenhouse gas emissions. Local geography and climate partially determine the amount of energy used to heat and cool buildings. Together, land use planning and urban design affect about 56 percent of the nation’s total energy use.⁴³ Local infrastructure, tax codes, and availability of and access to information can also indi-

rectly influence greenhouse gas emissions.

REDUCING THE RISKS OF CLIMATE CHANGE WITH ADAPTATION MEASURES THAT PROTECT AND INCREASE THE PROSPERITY AND VITALITY OF COMMUNITIES

If the climate changes as some scientists predict, communities will have to choose how to adapt to the adverse impacts of this new climate and position themselves to take advantage of any benefits. Accelerated sea level rise, changing rainfall patterns, more intense and more frequent storms, and changes in the natural resource base could have a detrimental impact on communities. Smaller communities that lack resources to recover fully or find new sources of economic sustenance may be particularly affected. Unless communities plan ahead, they may be ill-prepared to respond to these challenges.

Protecting the climate can be made an integral part of sustainable community development. Because both the potential impacts of climate change and strategies to reduce greenhouse gas emissions will unfold over many decades, policy choices made by communities today will have a lasting impact on future generations. Proactive efforts to reduce greenhouse gases could help communities avoid some of the risks of a changing climate. However, given the evidence that climate has changed in the past and is likely to change in the future even without human-induced change, it may also be appropriate for communities to consider adaptive responses by adjusting planning, engineering, and regulatory strategies to take into account the vulnerability of different areas.

Although this is an important issue, the Council did not consider in detail how communities could prepare for a changing climate. In general, we recognize that some climate adaptation measures could help communities achieve other sustainable development goals. Coastal and riverside communities could reduce their vulnerability to more intense and frequent storms by reestablishing upstream wetlands and forests, and improving the ability of soils to retain water. Such action could have both economic and environmental benefits. Urban communities could reduce peak summertime temperatures by pursuing more intensive urban reforestation, painting buildings and roofs lighter colors, and

using lightercolored paving materials. Lower summertime temperatures could reduce the formation of air pollutants such as ground-level ozone. Early warning heat notification systems could help citydwellers plan appropriate activities for very hot days, and thereby avoid some of the adverse health effects of high temperatures. Inoculation programs and public education could reduce the rates of contraction and severity of illnesses, while simultaneously improving public health. Because the efficacy and efficiency of these adaptation steps likely will vary by region, actions taken to prepare for a changing climate should complement efforts to reduce greenhouse gas emissions.⁴⁴

Communities can start to meet these challenges by addressing local problems such as traffic congestion, air pollution, urban sprawl, and energy costs. By incorporating climate change into the fabric of these daily decisions, steps can be taken to reduce greenhouse gas emissions and, at the same time, increase the prosperity, resilience, and vitality of communities. In other words, communities can combine steps to reduce greenhouse gas emissions with their plans to achieve sustainable development.

Because of the diversity of sources of greenhouse gases, local level climate mitigation strategies can be designed to take local circumstances into account.



The solar car "The Last Olympian" was built by the "Pirates" from Cinnaminson High School in New Jersey, for the Northeast Solar Energy Association's 1998 American Tour de Sol Competition. The Tour is sponsored by the U.S. Department of Energy and others. The high school team that won the 1998 competition beat Ford, Honda, Chrysler, and other large corporations to finish first in five categories and second in one category to finish first place overall. This accomplishment demonstrates the value of project-based education for sustainability.

Photo: Allan E. Bacr, SolarQuest I-NetNews Team.

C H A P T E R 3
ENVIRONMENTAL
MANAGEMENT

Communities have selected a range of activities that help them solve other quality-of-life concerns. Each project selected by different communities can take advantage of the unique opportunities afforded by the individual community to integrate climate protection into efforts to improve the economic, social, and environmental infrastructure that sustains them.

Innovative measures that reduce overall greenhouse gas emissions and solve other quality-of-life concerns are an essential part of a national climate protection strategy. Just as the character of communities changes from place to

“Advise the President on the next steps in building the new environmental management system of the 21st century...”

—PCSD Charter, April 1997

place, each community will present unique, local level solutions to the problem of global climate change that helps us all pursue a sustainable future.

FOSTERING BROAD-BASED COMMUNITY PARTICIPATION TO REALIZE THE BENEFITS OF CLIMATE PROTECTION

A number of systems changes could leverage existing infrastructure, networks, and systems to catalyze community efforts to protect the climate. The Council identified a number of efforts currently under way in communities to encourage economic growth, environmental protection, and social justice that could be easily replicated or adapted to include climate protection.⁴⁵ These examples illustrate some important lessons for encouraging other innovative measures to protect the climate on a larger scale.

1. Encourage and promote rapid learning that leads to action. The United Way of Metropolitan Atlanta and the Georgia Public Service Commission established the “211” Atlanta project to use the telephone system to connect individuals with common interests. By

dialing 211, an Atlanta resident is connected to a central facility that maintains a database of participating citizens’ interests. For example, a person interested in improving the energy efficiency of their home could dial 211 to be connected to people who know about the methods and technologies to reduce home energy consumption.

Goldman Sachs and the U.S. Department of Energy worked together to help schools and hospitals recognize the benefits of energy efficiency. Together, they developed a new underwriting method that recognizes the cost savings of energy-efficiency improvement. Schools and hospitals that agree to follow a specific protocol to improve the energy efficiency of their buildings can qualify for lower interest rates under this initiative.

2. Make full use of economic and social capabilities that are currently available to reduce emissions. The U.S. Environmental Protection Agency’s Smart Growth Network helps developers choose options that reduce sprawl and attendant traffic and air quality problems. The partnership program helps developers identify and reuse land that is already served by water, sewer, gas, telephone, and electric utility services. Reusing the infrastructure in some of these places only costs \$5,000 to \$10,000 per unit compared to \$50,000 to \$60,000 per dwelling unit for building new infrastructure in some greenfield locations.
3. Encourage entrepreneurial interests to identify and develop new markets for measures and products that support climate protection objectives. “Location-efficient mortgages” are a promising home mortgage product that can help prospective homeowners realize the reduced transportation expenses associated with living near the places they work or living near public transportation. A partnership has been built with banks and the Federal National Mortgage Association to offer these mortgages in six U.S. cities: Chicago, Seattle, Los Angeles, San Francisco, Miami, and Milwaukee.
4. Reward achievements and innovations that further the realization of climate protection goals. Providing opportunities for large numbers of small sources to participate in market-based programs to reduce emissions could provide a new set of options to achieve those reductions cost effectively. For example, the Chicago and Pittsburgh Public School Districts are

KEY FINDINGS — ENVIRONMENTAL MANAGEMENT

- Sustainable development requires rethinking the nature, source, and linkage of environmental problems. The current definitions of environmental pollution, environmental management, and environmental protection are too narrow, in some cases, to permit identification of the true nature of the problems (e.g., cultural, economic, institutional, political) and to recast their potential solutions.
- Developing and using information on environmental performance and conditions is critical to any environmental management framework and must be incorporated at all levels of decisionmaking. There is a need to develop, agree upon, and apply common metrics for measuring and reporting environmental performance of products, households, services, firms, facilities, and the economy; and to further develop and use indicators to measure environmental outcomes and monitor ambient environmental conditions.
- Environmental conditions can and should be improved beyond existing requirements with an environmental management framework that is organized for performance and that differentiates among size, sectors, and performance levels. To do this, and to align the framework more closely with the economy, environmental managers should employ effective, certifiable environmental management systems, environmental accounting practices, and appropriate market mechanisms that will improve environmental performance.
- Regional and systems approaches to environmental management and economic development that better align human activity with natural cycles provide multiple benefits. An environmental management framework should strive to understand the interdependencies between communities, nature, and the economy; implement strategies that respect and use those interdependencies to improve the environment; and preserve and, when possible, restore biodiversity as a necessary part of ecological vitality.
- An environmental management framework that fosters sustainable development needs to respect and incorporate the value of community and place. Communities, like organizations, differ in size, ability, sophistication, and understanding of environmental issues; the framework should be sensitive to such differences.
- The framework should include both traditional tools and new approaches, and promote early action on emerging issues by involving companies, interest groups, government stakeholders, and international partners in constructive dialogues that lead to solutions. The framework should foster the application of goal-oriented strategies to existing environmental problems that are inadequately addressed by traditional systems or programs (e.g., nonpoint source water pollution and dispersed air sources).

committed to forming a Great Lakes Energy Network. By learning how to measure the emissions from their facilities and incorporate energy-efficiency metrics into their existing accounting systems, the districts hope to participate in emissions trading opportunities for air pollutants as well as greenhouse gases.

The new environmental management framework of the 21st century will drive continuous environmental improvement to accompany continuous economic and social gains.

TOWARDS SUSTAINABLE CLIMATE ACTION

Consensus building, outreach, and inclusive approaches are essential components of sustainable climate action. The Council's experience illustrates the significance of these strategies, as well as the efforts necessary to reach out to other stakeholders on the climate issue.

An important benefit of the Council's work on climate change was increased trust among the Council members and a better understanding of the diverse views they brought to the Council's discussions. Continued dialogue helped them reach consensus on difficult issues, and, in cases where they could not agree, gave them a better appre-

“Reinvented,” the environmental management framework can emphasize watershed protection, habitat restoration, community-based environmental protection, or brownfields redevelopment.

ciation of each other’s concerns.

Outreach and participation by diverse stakeholders at Council-sponsored events helped all meeting participants better comprehend the complexities of the various issues that emerge when considering climate change. For example, the Council convened a forum to increase understanding about the Clean Development Mechanism, the results of which are described in chapter 5. As defined in the Kyoto Protocol, the CDM is intended to provide a means to facilitate investment in projects that help developing nations achieve a cleaner growth path, and, in turn, help investor countries earn credits for subsequent greenhouse gas emissions reductions. By reaching out to diverse stakeholders — including businesses that might invest in CDM projects, developing countries that might want to attract these investments, and environmental groups and nongovernmental organizations interested in the Kyoto Protocol — participants were able to discuss the opportunities and challenges in establishing a viable CDM. In this respect, Council outreach helped further a broad understanding of the various stakeholder perspectives.

The pursuit of climate protection is fundamentally linked to any national agenda for sustainable development. The Council is convinced that collaborative approaches focused on defining and reconciling the needs and aspirations of individuals with community values and the requirements of future generations can help promote direct and meaningful action to protect the climate. By working together, we can reap the benefits of acting to protect the climate as we strive to achieve economic growth, environmental protection, and social justice for ourselves and posterity.

Introduction

Sixty years ago, the World’s Fair of 1939¹ introduced to its visitors “The World of Tomorrow.” The fair’s “Futurama” exhibit presented a glimpse of life in the year 1960. Millions of people visited the diorama depicting life in the city of the future, and millions more saw the movie reel made about the exhibit and the vision it presented. In some ways, the sustainable development issues we face today arose out of the nation’s pursuit of a modern world “without limits,” as reflected in that 1939 vision.

A lesson from the 1939 World’s Fair is that America and the world can benefit from a concrete, positive vision of a sustainable world. To have any effect, this vision must be appealing and meaningful to people — it must represent the kind of world people are willing to build. Today, as we think about the promise of the future, we recognize the need to make changes to the economic, social, and environmental protection practices of today so that future generations will enjoy that promise.

There are, in fact, economic and social dimensions to almost every environmental issue — and these are frequently interrelated.

The 1997 charter asks the Council to “advise the President on the next steps in building the new environmental management system of the 21st century.”² The “environmental management system” refers to the overall framework of a broader set of institutional and individual influences that effect the environment including, but not limited to, environmental laws and regulations, corporate stewardship, economic and financial systems, and other features of organized society.³ In the greatest sense, this framework⁴ represents all human activities that directly or indirectly affect the environment, extending the opportunities we have to address change while simultaneously protecting the environment.

The 1996 report of the President’s Council on Sustainable Development (PCSD)⁵ made a number of recommendations regarding the nation’s environmental management framework. These included: accelerating efforts to evaluate existing regulations and to create opportunities



Photo: Stephen Delaney, U.S. Environmental Protection Agency.

for attaining environmental goals at lower economic costs; creating an alternative performance-based management system; using market incentives as a part of an overall framework; and shifting tax policies and reforming subsidies that encourage environmentally damaging activities.⁶ Building on these recommendations and other recent work (some of which is discussed Appendix B-3),⁷ here we focus on integrating key concepts and recommending next steps for organizing environmental management toward sustainable development.

The next section of this chapter briefly discusses why the system needs to advance and describes how that process has begun. This is followed by a section on Attributes which presents further observations on the vision of a new environmental management framework and its key attributes⁸ (e.g., Improve Performance, Ensure Environmental Stewardship, Involve Communities). Finally, we offer specific recommendations about the next steps in building a new framework to foster sustainable development. These recommendations suggest how and where change can happen, although any new framework would encompass a far greater number of issues, as well as the imperative of the international context.

BUILDING A NEW ENVIRONMENTAL MANAGEMENT FRAMEWORK

The need to improve environmental quality will not be eradicated once a certain threshold or level of protection has been reached. Even as we continuously and persistently strive to enhance our economic well-being, our health, and the quality of our lives, so too must we constantly pursue a goal of improved environmental quality. To this end, we must build an environmental management framework that will, now and in the future, promote clean air, clean water, less stress on fragile resources and natural habitats, and greater resource productivity.

An environmental management framework that fosters sustainable development has a clear and indisputable goal: continuous⁹ environmental improvement that respects the importance of social and economic well-being. If the new environmental management framework of the 21st century is to drive continuous environmental improvement to accompany continuous economic and social gains, the framework must optimize the positive dynamic interplay between people, markets, information, technology, and the natural world.

Over the past several years, numerous experiments have been undertaken that suggest the shape of a new environmental management framework conducive to sustainable development.¹⁰ Conventionally, environmental protection has focused on individual waste streams from facilities. “Reinvented,” the environmental management framework can emphasize watershed protection, habitat restoration, community-based environmental protection, or brownfield

An environmental management framework that is organized for improving performance includes, but is not limited to, the following characteristics:

- Focuses on performance results and progress towards goals;
- Measures, analyzes, and disseminates performance information and other indicators that can help organizations improve environmental performance results;
- Uses environmental management and accounting systems that establish clear and effective performance-based goals and encourage innovative means of achieving current and future environmental requirements; and
- Increases resource productivity (i.e., doing much more with much less) and fosters simultaneous improvements in productivity and the efficient use of materials and energy.



The “Henry’s Fork Watershed Initiative” aims to improve water management policies in the river basin. Here, the Henry’s Fork Watershed Council conducts a “Web of Life” exercise, intended to demonstrate the interconnection of interests among watershed parties. Participants included representatives from the U.S. Bureau of Reclamation, the Idaho Department of Fish and Game, the Fremont Madison Irrigation District, the Department of Environmental Quality, and members of the local agricultural community. Photo: Center of Excellence for Sustainable Development.

redevelopment.¹¹ These and many other initiatives point the way to an environmental management framework for sustainable development. While none of them individually represents a complete model, they each suggest elements that should characterize of the environmental management framework of the future. Moreover, the combination of these elements would undoubtedly have a multiplying effect, increasing the performance level of each element.

A new environmental management framework will include standard requirements for all regulated activities with more flexible strategies for those demonstrating strong environmental performance and improvement. Such a framework will tap a combination of voluntary,

regulatory and market mechanisms that motivate improved environmental performance, recognize the value of community, and respect a sense of place. The new framework will focus on and encourage more efficient and effective performance levels for environmental management and protection.

This chapter aims to accelerate implementation of a new environmental management framework. The next section presents a vision of sustainable development; the subsequent section presents recommendations that help align and sensitize the current environmental protection system toward sustainability. Together they provide a compass for charting the next steps in building the environmental management framework of the 21st century.

The recommendations presented here are accompanied by corresponding examples to indicate where intervention for sustainable development might occur.¹² These related environmental management activities are used to illustrate the concepts being discussed and are not necessarily intended as an endorsement of any specific program. As with most environmental management reforms, these and other recent initiatives were not explicitly designed to achieve sustainable development goals; many are achieving success, but not always in the integrative way, or to the degree, that sustainable development requires. Finally, in making these recommendations, the Council has not identified what the roles and responsibilities of each sector should be. Rather, these recommendations are presented so that all groups and institutions can take the next step by making the commitment to act, both individually and collaboratively.

Through communication of the principles of environmental stewardship, it is hoped that the following will be achieved:

- Wider understanding of the need to face the environmental, economic, and social demands of growing population and greater prosperity together (that is, weighing economic development and growth against the carrying capacity of local and global ecosystems).
- Redefinition of commercial activity to focus on the delivery of service and value instead of the delivery of material or products.
- Increased adjustment of public works and institutions, private enterprise, and human activity to operate in ways that understand and complement the natural cycles of the Earth.
- Integration of environmental management with core business strategies so that environmental stewardship has value as a part of doing business.
- Integration of renewable (sustainable) forms of energy into mainstream production processes.

Increased levels of community stakeholder involvement influence decisions through:

- Inclusive collaboration for problem solving and planning to ensure that companies, agencies, and communities can achieve mutually beneficial results;
- Better reporting systems and planning processes that inform and involve the public; and
- Ensuring that environmental benefits are shared and burdens reduced across society without disproportionate impacts.

ATTRIBUTES OF NEW ENVIRONMENTAL MANAGEMENT FRAMEWORK

One of the most important revelations of the Council in *Sustainable America* was that meaningful and long-term solutions for environmental, economic and social equity problems will require new strategies that redefine the source of problems, create mutual benefit throughout society and the chain of commerce, and achieve multiple goals — environmental, economic, and social — simultaneously. *Sustainable America* promotes the concept that no matter what environmental issue we choose to address, our goal should be to understand the interrelated economic and social aspects of that issue as well. Solutions must therefore address the environmental, economic, and social aspects of issues and problems as they relate to one another.

The seven characteristics of a new environmental management framework described below, are among the requisite, interrelated components that constitute the Council's further vision of a sustainable development approach to environmental management in the 21st century.¹³

IMPROVE PERFORMANCE

Economic growth, and therefore sustainable development, cannot occur without a commensurate increase in employment opportunities.

Improve environmental conditions beyond existing requirements and measurably increase resource productivity with performance-focused environmental management.

Environmental management decisions should focus on improving environmental performance, taking into account social and economic impacts. To facilitate this approach, incentives for continually improving performance must be incorporated into environmental management in ways that encourage innovation for performance beyond existing requirements. Equity and economic growth should also be seen as performance-improving goals.

Sustainability requires all organizations to strive beyond existing requirements with innovative, improved, or enhanced processes or pollution prevention techniques. Organizing for improved environmental performance can accelerate progress towards sustainable development and may encourage innovation and development of new approaches for achieving environmental management goals. In pilot programs, this has been done by categorizing regulated entities into separate tiers based on performance. For instance, "Greentrack" describes programs or initiatives designed to reward and support top environmental performers, although incentives are needed to motivate all organizations to perform beyond existing requirements.¹⁴ The value of organizing environmental management toward performance goals also applies to public facilities or other entities that may not be regulated, monitored, or currently expected to create and manage performance goals. A framework that focuses on performance will challenge all sectors to improve productivity and the efficient use of materials and energy.

ENSURE ENVIRONMENTAL STEWARDSHIP

Producers and consumers share extended responsibility for the environmental effects of making products, their use, and waste streams through a life-cycle approach.



Waste streams can provide raw materials for new products. Saprophyte, LLC uses industrial wood waste as a novel source of materials for modular furniture.

Photo: Saprophyte, LLC, Providence, Rhode Island.



Environmental stewardship is an ethic and practice of responsibility toward the Earth and its natural processes for the life of products, materials, and energy. It suggests that this responsibility is shared variously by all those in the flow of commerce. Environmental stewardship is an essential element of an environmental management framework.¹⁵ Indeed, a shared sense of responsibility towards the natural environment is necessary to achieve the objectives of sustainable development.

INVOLVE COMMUNITIES

Foster collaboration in problem solving and planning among companies, agencies, and citizens to achieve mutually beneficial communitywide results.

Communities, governments, and businesses can form a powerful degree of consensus, building a culture of inclusive engagement to support sustainable development. The process of making decisions that affect the environment and the community can often be enhanced by sharing information resources, clearly articulating objectives, and collaborating with stakeholders. Information from the community helps expand environmental management decisions to

include social and economic issues. Community participation and multistakeholder collaboration processes at the firm level and at all levels of government and public affiliation can also help optimize the efficacy and efficiency of environmental management decisions.

Not all communities are alike or seek the same level or type of involvement. Stakeholders know and can describe problems, priorities, and concerns; but generally, they do not possess the resources to solve technical problems, to help set complex standards, or to involve themselves in time-consuming processes. Decision-making processes should be designed to ensure that they nevertheless have a meaningful role. Orienting and expanding collaboration to a regional scope may increase the likelihood that, to the greatest extent possible, agreement on a sustainable design will be attained without diminishing individual community needs or voiding national goals.

ENGAGE EMPLOYEES

Advance employment opportunities in healthy, safe, and ecologically benign work environments and offer human resource development that satisfies the talent, skill, and

One of the far-reaching aims of sustainable development is to better align human activities with the natural cycles of the earth...

desires of employees.

In *Sustainable America*, the Council said that “jobs, productivity, wages, capital and savings, profits, information, knowledge, and education” must grow to achieve a vision of sustainable development.¹⁶ Sustainable development extends to employment both in terms of the level of employment needed for a sustainable society and the quality of employment desired by working people. No economy can survive long without addressing both of these related issues.

Environmental education and training provided as part of job responsibilities have been shown to enhance employee involvement in environmental management and to increase performance levels beyond compliance. A Cornell University study determined that a “serious and organized effort to involve employees in pollution pre-

Climate Change Opportunities:

Market mechanisms are likely to play a significant role in any strategy to reduce greenhouse gas (GHG) emissions. Some financial institutions are already beginning to reassess and project the value of energy efficiency, renewable energy, technology, and environmental management in future markets. This evaluation is based on the perception that foreign markets and governments are moving to provide incentives — both economic and political — for early reductions in GHGs and other releases that may become marketable. Participation and formal credit for emissions reductions in such market programs can be facilitated by the use of environmental management and accounting systems that include measures to track energy efficiency and GHG reductions.

vention” is more important to program effectiveness than the occasional solicitation of their ideas. “The employee needs to believe that the organization is making a serious effort to involve and empower him or her in matters of pollution prevention.”¹⁷ Similarly, energy efficiency and materials management can be optimized when this same level of engagement is reached.

The management framework that fosters sustainable development is one that achieves environmental benefits while simultaneously establishing a positive, rewarding work environment. For this to happen, the future framework needs to recognize the asset and productivity value of human capital, as well as the employment levels needed to promote prosperity for greater numbers of people. Economic growth — and therefore sustainable development — cannot occur without a commensurate increase in employment opportunities.

PROVIDE INFORMATION

Use standardized public reporting formats and comparable data sets comprised of metrics, benchmarks, and/or common indicators of environmental performance geared toward generally accepted accounting practices and for generating feedback systems for learning.

An information-rich system, one that generates and disseminates accurate and useful information, has multiple advantages. It motivates those who are being measured to perform better. It allows analysis of past experience to inform future practices.

“Information rich” does not mean, however, that “more is better.” Information is relevant to the environmental management framework to the extent that it is meaningfully incorporated into decision-making processes and adds to the learning that leads to problem solving. Open information policies and practices recognize that

disclosure, transparency, and active dissemination of information should be the rule, not the exception, with the goal of increasing access to public information for all segments of society.¹⁸

A new environmental management framework needs high-quality baseline data and metric measurements — information that should be accessible and understandable to the public — and methods for making sustainable decisions. Performance should be monitored against these baselines to measure and verify effectiveness of environmental management and resource productivity. In addition, benchmarks and indicators are needed to conduct comprehensive impact assessments; evaluate the effectiveness of environmental management programs; and measure progress towards sustainable development at the local, state, national, and global levels.

ADOPT INTEGRATED APPROACHES

Employ a systems approach towards environmental management and sustainable development that aligns and maintains a balance of economic and social influences that complement natural cycles or ecological systems.

The fates of the economy, social well-being, and the natural environment are intertwined. For example, the pursuit of eco-efficiency (improvements in environmental performance) should benefit both the natural and social environments. Although it is not possible to take every interdependence into account in every decision, thinking about activities in terms of holistic systems with integrated economic, social, and environmental components can eliminate costly mistakes, unintended consequences, duplication, and gaps. The future framework needs to encompass not only the traditional elements of environmental protection, but also consider nontraditional factors

Future opportunities for measuring environmental performance include:

- Reporting relevant, comparable, standardized environmental performance information (both local and global, public and private);
- Providing useful information about ambient environmental quality and conditions;
- Creating synergy with the evolution of international environmental management standards;
- Developing decision-making tools for investors, customers, vendors, regulators, citizens, etc.;
- Tracking energy efficiency, increased resource productivity, land use, and other indices of sustainable development; and
- Enhancing the ability of stakeholders and regulators to assess environmental performance improvements.

that affect the environment, such as energy efficiency, the dynamics of ever-increasing per capita demand for products and services (e.g., vehicle-miles traveled), and the impacts that reductions in one media might have on another (e.g., multimedia and crossboundary effects).

At the broad resource management level, “systems thinking” means employing approaches that consider the entire ecosystem. The concepts of biodiversity and bioregional or crossboundary effects instruct us that natural systems play a crucial role in building the best environmental management and economic development approaches. Energy use and natural resource consumption are particularly vulnerable to waste. Management, logistics, and accounting systems should be used not merely for efficiency, but to design better delivery and service patterns that lead to reduced energy and natural resource

demand.

At a community level, brownfields redevelopment provides an example of an approach that is integrated and holistic. Previously industrialized land is being redeveloped with a differentiated approach to environmental cleanup costs, although each such brownfields site must address acceptable levels of risk in accordance with planned uses and any unaccounted for pollution. In general, brownfields are a cost-effective option for managing urban sprawl by reducing greenfields development.

At the facility level, systems thinking means treating a facility as a holistic entity, or a “closed loop.”¹⁹ Integrated and holistic systems also address the entire life cycle of materials and energy. Together, these concepts suggest “that manufacturing be treated not as a linear activity, but as circular. . . in a closed loop, sustainable system...treating products holistically from cradle-to-cradle. . . to establish pollution prevention and product stewardship as standard business practices.”²⁰

At all levels, holistic environmental understanding can be introduced to more closely complement or incorporate natural biological cycles and systems. One of the far-reaching aims of sustainable development is to better align human activities with the natural cycles of the Earth by designing our systems to mimic the cyclical flow of energy and waste within natural ecosystems.

USE ACCOUNTING SYSTEMS AND MARKET MECHANISMS

Recognize the economic value of natural resources as assets and, the business and financial value of environmental management performance; create appropriate incentives

The Florida Department of Environmental Protection’s Environmental Performance Measures program developed sustainability plans that identify key issues and multi-agency strategies to improve environmental conditions within regional ecosystems. This program uses a four-tier system to monitor agency performance. These tiers include Environmental and Public Health Indicators, Behavioral and Cultural Measures, Outputs and Activities, and Resource Efficiency Measures. These four categories are intended to work together, allowing environmental management to be considered at different levels.

Accounting for Sustainable Development (ASD), developed in cooperation with the Society of Management Accountants of Canada to measure sustainability in corporations, is an accounting approach that encompasses the entire cycle of production, also known as full-cost accounting. Currently, the ASD framework is being utilized in the development of some environmental management systems.

that stimulate innovation and the use of market mechanisms in the pursuit of environmental goals.

Ecosystem functions and natural resources have value. So long as these benefits — and the costs associated with externalities such as pollution — go uncounted, environmental management will remain a cost-centered phenomenon, unable to drive sustainable environmental results. This evolution will occur only as the economic and social value of biodiversity, watersheds, wildlife, and other natural resources are finally realized, and environmental accounting becomes a regular approach within businesses, governments and other organizations.

In a framework that fosters sustainable development, environmental quality and economic vitality can be achieved together. A new environmental management framework should employ economic means that will motivate businesses and individuals to improve environmental quality. The key to linking market rewards with improved environmental performance is the recognition of externalities, or releases into the natural environment, as waste in the economic system.²¹ By contrast, reducing pollution and increasing efficiency often produce financial gains to the economy that are left out of the accounting system.

Managerial accounting practices can be an appropriate tool for integrated environmental management as reflected in firm accounts. The use of managerial accounting systems to track the full costs and benefits related to environmental performance is very important to the firm's identification and implementation of environmentally preferable practices. Although some firms use managerial accounting information in their approach to environmental management, they often fail to link such information to their financial performance (e.g., shareholder value). The reporting of environmental impacts and financial information to external interests, and the inclusion of environmental performance, liabilities, and expenditures in company financial statements, can be powerful drivers for firms to improve their overall value as well as their environmental performance.

Financially related drivers in lending, investment, and insurance increasingly anticipate, value, and reward improved environmental performance. One way for firms to take advantage of good environmental performance internally is to link environmental management with their business strategy and financial performance. For instance, a particularly effective environmental management system may lead to discounts in credit rates or insurance costs, or may return market value to the firm. Understanding and

The Global Reporting Initiative, a multiyear project of the Coalition for Environmentally Responsible Economies, aims to establish - through a global, voluntary, and multistakeholder process - the foundation for standardized corporate sustainability reporting worldwide. The effort is intended to elevate sustainability reporting practices to a level equivalent to, and as routine as, financial reporting in terms of comparability and generally accepted practices. Draft guidelines will be beta tested on roughly two dozen organizations.

reporting the financial value of this environmental performance allows organizations to better allocate public and private resources.

Separate, but related, to the managerial and financial accounting for environmental management is the emergence of market-related mechanisms. Market-based mechanisms to reduce pollution that are linked directly to an organization's profitability can motivate organizations to improve environmental performance. Market-related mechanisms are not a stand-alone solution. Rather, some can be coupled with the existing regulatory system to achieve the objectives of the new framework. Other types of market-related mechanisms need additional regulations in order to be implemented, or changes in the current regulatory system to function effectively and efficiently. Ideally, good strategies will work with or enhance the current system, or break down barriers to improvement.

RECOMMENDATIONS

MEASURING PROGRESS AND ACCOUNTABILITY

Developing and using high-quality information on environmental performance and conditions are critical to any management framework and must be incorporated at all levels of decisionmaking. Information by itself, however, does not solve problems. Information-driven applied learning leads to change. Ideal information systems improve the collection, organization, and dissemination of comprehensive, relevant data; reduce duplication and streamline reporting requirements; and inform decision-makers about economic, environmental, and equity impacts to set better goals.²²

National Metal Finishing Resource Center is comprehensive environmental compliance, technical assistance and pollution prevention information source available to the metal finishing industry. The Center is an Internet Web Site that casts information in a way that makes it accessible to an entire range of users and establishes convenient and user-friendly delivery mechanisms. It also serves as an information resource and distribution channel for technical assistance programs and has many on-line conferences whereby users can talk to each other about specific compliance issues. Services and products include: an EPA Regulatory Determinations collection pertaining to metal finishing; performance and cost comparisons across technology options; pollution prevention case studies; and vendor information.

The Digital Earth concept, although not yet fully operational, is a characterization of the terrestrial natural and cultural environment, referenced in space and time, along with the educational program needed to communicate the possibilities and procedures of using a fully developed imaging system of the Earth. Within the United States, the National Spatial Data Infrastructure established by Executive Order in 1994 provides the basic mechanism for the coordination, access, and distribution of the geospatial data needed to form the Digital Earth. These data can be used in geographic information system applications, which is of increasing interest at the local government level. International or global data sets can extend the geospatial components beyond U.S. borders.

Information needs to be sufficiently comprehensive to enrich collaborative decisionmaking and measure real progress. Insular anecdotes, dated reporting materials, and periodic assessments must be replaced by a more compre-

Strategies that provide incentives for performance improvement should be sensitive to business size and sectoral differences, distinguish between strong and weak performers, and leverage third-party agents when their participation would be feasible and effective.

hensive, credible, and standardized data collection and reporting system that is relevant and valuable to managers, the marketplace, and interested citizens or groups. Environmental performance data should be shared with the public in a timely manner to provide tangible accountability and to foster environmental awareness. Education and information technologies such as the Internet can increase public understanding and access to comprehensive, useful data. However, balanced against the public's right to know and need to understand is the obligation to protect valid confidential business information.

Assessing and reporting performance can improve the overall quality of both private and public operations. Better performance can facilitate participation in innovative management strategies that reduce overall costs while providing improved environmental protection. In addition, measuring, accounting, valuing, and disclosing envi-

ronmental performance to investors, customers, vendors, and the public may enhance the enterprise or business value of some corporations.²³ Further development and implementation of environmental assessment tools and accounting criteria for economic, financial, and regulatory purposes are needed to realize these benefits more broadly.

Recommendation 1

Measure environmental progress.

The public must be confident that progress is being made to achieve national, state, and local environmental goals. To assess that progress, environmental performance and conditions should be measured at many levels: national, state, discernible regions, community, company, and individual facility (whether industrial, agricultural, public, or commercial). Collection and dissemination of good

The Chemical Industry Compliance Assistance Center makes available a wealth of detailed information on federal regulations and pollution prevention practices, including plain-English guides, pertinent interpretative memoranda, compliance checklists, fact sheets, and links to technical assistance providers, state/local regulators, and professional and industry organizations. The Center is sponsored by the National Center for Clean Industrial Treatment Technologies, a research consortium dedicated to advancing pollution prevention, along with the Pacific Northwest National Laboratory, the University of Wisconsin's Solid and Hazardous Waste Education Center, and EPA.



The inside of F-16 fuselages are cleaned with a spray of water and liquid soap. Replacing a process that used five tons of ozone-depleting chlorofluorocarbons (CFCs) and volatile organic chemicals annually, the soapy water process is part of a CFC-elimination effort that has saved Lockheed Martin Tactical Aircraft Systems \$8 million in the last five years. Photo: Pat Corkery, Lockheed Martin.

environmental information linked to established goals may help drive performance improvement and better planning, increase resource productivity, and alleviate stresses on the environment.

Various stakeholders use environmental information in different ways. For policymakers, this information can be integrated into a larger set of indicators for sustainable development.²⁴ Regulators can use environmental performance data to better allocate resources for program management. For the private sector, environmental accounting helps determine the strategic business value of environmental activities, which can be an important factor in business planning and the creation of new markets. Information on pollution trading rates, ambient conditions, and environmental resources can be used by citizen groups and others to set goals and determine priorities for community development and restoration.

Action 1

EPA's Environmental Accounting Project works to encourage the modification of accounting practices to accept and explicitly account for the environmental cost of all business decisions. This program focuses primarily on managerial accounting practices and those costs internal to the firm, and encourages identification of environmental costs within a facility by product or process. This information can be used by managers to develop more accurate costing and pricing of products and services. It is anticipated that applying environmental management accounting principles will demonstrate the business benefits of environmental stewardship and better performance.

Develop and apply agreed-upon sustainable development indicators and collect the necessary data for measuring environmental progress at the regional, state, and national levels.

Action 2

Develop, apply, and report on specific indicators for facilities, firms, sectors, communities, and the economy to track increased resource productivity (for services and production, public and private).

Action 3

Invest in information systems for monitoring environmental conditions to assess and report on local and regional impacts and transboundary effects, and to establish priorities.

Action 4

Use accounting practices in the management of environmental performance at the firm level to derive strategic business value.

Action 5

Use financial performance information and analysis to drive institutional decisionmaking toward the profitability of sustainable development.

Recommendation 2

Define common metrics for environmental performance.

Performance metrics and indicators help ensure that the right information is collected to support achievement of environmental goals and to accelerate progress towards them.²⁵ A common set of metrics, measurements, and indicators is needed to meaningfully inform communities, nongovernmental organizations, regulators, and financial analysts interested in the environmental performance of organizations. This set must be consistent, unbiased, and understandable; relevant to the issues being addressed; able to portray trends over long time periods; and capable of communicating the relative risk and comparable progress on various environmental matters (see appendix B-1).

The Environmental Results Program of the Massachusetts Department of Environmental Protection is a sector-specific program targeting small businesses that replaces the current state permit system with a mandatory certifying program intended to be a more effective method for improving environmental performance. The state provides all businesses in a specific sector (e.g., drycleaners, photo processors, printers) with detailed workbooks explaining why and how they need to protect the environment in their workplace, and identifying specific required activities. The program also incorporates an aggressive outreach strategy that includes working with the trade associations and translating material into other languages when needed to reach business owners; a requirement that senior business officials certify their company's compliance with environmental requirements; a targeted enforcement effort to assure compliance; and a program evaluation component to monitor the industry compliance rate.

EPA's Common Sense Initiative is a participatory, multistakeholder program that seeks innovative ways to achieve environmental goals for six industry sectors. Under this program, the metal finishing sector recently launched a National Strategic Goals Program to improve the environmental performance of metal finishing facilities. At the national level, the industry committed to achieve a set of specific environmental goals (e.g., by the year 2002, 98 percent metals utilization on products, 50 percent reduction in metals emissions to air and waste, 50 percent reduction in water use). To promote achievement of the goals, a tiered program offers incentives appropriate to four levels of environmental performance, as follows: operational or regulatory flexibility for top firms; compliance assistance for mid-performers, transition assistance for firms that might otherwise abandon contaminated operating sites, and enforcement against chronic noncomplying firms. EPA provides guidance and support to the program, which is being implemented and tailored by participating state and local agencies.

Ideally, a new framework that incorporates metrics and indicators for common performance elements shared by most public and private organizations would be developed first. This reporting system would reflect both site-specific (e.g., facility) and organization-level (e.g., corporatewide) performance. These systems must then evolve to account for sectoral and regional differences, and incorporate similar measures of economic and social well-being.

Action 1

Develop multiple stakeholder agreement on and implement common metrics for measuring environmental performance (using a model of generally accepted accounting principles where appropriate) to:

- Assess progress towards protection of human health and the environment;
- Gauge operational flexibility and performance standards in alternative performance-based management strategies;
- Identify market mechanisms and business values that help improve the regulatory approach and drive optimal performance; and
- Communicate relevant environmental performance and improvements.

Action 2

Measure environmental performance and report relevant information in a standardized format to foster continual improvement for products, facilities, and firms.

Recommendation 3

Link environmental, economic, and social information.

To balance interests and optimize progress towards sustainable outcomes, environmental performance information must be integrated with social and economic information. Greater strides in sustainable development will occur when businesses are able to capitalize on the financial value of good environmental performance, life-cycle issues are considered in process and product design, and consumers are able to see beyond the material to the value of products. The paramount goal for integrating diverse types and levels of information is to affect the decision-making process in such a way that sustainable development opportunities become more obvious, and therefore logical and desirable.

Action 1

Develop incentives for collection, dissemination, and use of information on the life-cycle of products that focuses

Project XL (Excellence and Leadership) attempts to test new ways of producing better environmental results, while achieving greater efficiency for business and increased public participation through active stakeholder processes. The key to Project XL is regulatory flexibility to tailor regulations, policies, guidance, or approaches in a way that benefits project sponsors, while at the same time improving environmental performance. With these efforts, social and community benefits are increasing as the stakeholder process improves and matures. Project XL and other EPA reinvention programs represent cross-cutting attempts to improve and differentiate performance, thus providing important lessons for making systemwide changes in the framework.

Launched in 1995, the European Eco-Management & Audit Scheme (EMAS) is a government regulated voluntary environmental management system. EMAS distinguishes itself from ISO 14001, the international environmental management systems standard of the International Organization for Standardization, by virtue of its requirement for a site-specific public environmental statement. This statement must provide information on raw material, water and energy use, pollutant emissions and waste generation, and any other significant environmental effect. Using the financial auditing model, EMAS also provides for third-party verification of both regular site audits and the public statement. These features may add to the scheme's credibility, and can help participating sites focus on continuous improvement of environmental performance and external communication. They also reflect the roots of EMAS as a public policy instrument rather than an internal management tool, which is the focus of ISO 14001. Almost 2,000 sites in Europe have registered to EMAS. The European Union is currently proposing revisions to help make the voluntary initiative a better complement to existing requirements and increase its benefits to participating entities.

on optimizing the use of natural resources (i.e., materials), building energy efficiency, and reducing environmental impacts.

Action 2

Foster extended product responsibility by assigning appropriate levels of care to those who have the greatest capacity for stewardship in the life-cycle of a product.

Action 3

Create information resources to focus commercial activity on the delivery of service and value instead of the delivery of material or products.

Action 4

Educate the public about and encourage organizations to operate in ways that recognize and reduce environmental impacts and that complement natural cycles of the Earth.

Improving environmental management and performance.

The current national environmental protection system has achieved a substantial degree of success by requiring manufacturers to control pollutants; however, it is time to consider implementing new approaches. After decades of evolving environmental regulation, there is growing variation in the way different organizations perform. Some firms have already internalized the need for environmental stewardship into their business; others are simply focused on compliance. Still other firms need a great deal of assistance before they are able to meet environmental requirements at all. If the nation is to move toward sustainability, progress must come not only from the leaders, but through improvements in the performance of all actors.

Tools such as pollution prevention, design for the environment, extended product stewardship, eco-efficiency, and environmental management systems that include a commitment to continuous improvement enhance environmental performance.²⁶ These “prevention approaches” improve industrial efficiency through better energy and materials management; they can also provide safer places to work and reduce the impacts of pollution on communities. Organizations that lead the way in research, development, and application of these approaches should be supported and rewarded. In addition, industry leaders and

In the future, public and private institutions will need to evolve together as economic activity continues to grow and the environmental management framework becomes more complex, flexible, and diverse.

government should encourage adoption of more sustainable practices by the large majority of firms that are not currently high performers.

Regulatory systems need to recognize the different environmental management capabilities, commitments, and performance levels of both private and public entities. Differentiation among regulated entities must be based on their level of commitment to environmental stewardship, environmental management, and actual performance in achieving their environmental objectives. Ambitious national standards must be maintained, along with strong enforcement to ensure compliance with those standards. At the same time, the emphasis of some environmental managers on improving environmental quality and resource productivity — not just complying with standard requirements — needs to be affirmed. The environmental management framework and regulatory system should offer appropriate incentives to improve organizational environmental performance at all levels. Strategies that provide incentives for performance improvement should be sensitive to business size and sectoral differences, distinguish between strong and weak performers, and leverage third-party agents when their participation would be feasible and effective.

Recommendation 4

Differentiate by sector and size.

The management response of individual companies to regulatory programs depends on factors such as their size, information sources, the level of competition in their sector, and degree to which they sell directly to individual consumers. Regulatory programs should acknowledge these differences and address the various sectors in ways that account for their unique aspects and that will increase environmental performance. For example, regulatory agencies can help smaller businesses or specific sectors comply with targeted rules by providing detailed information about environmentally protective technologies, and by communicating

with the businesses through trade associations and suppliers. Regulatory agencies can also help small businesses explore ways to realize economies of scale in environmental protection such as sharing (i.e., aggregating) the costs and use of pollution control equipment or by sharing experts through cooperative contracts with environmental consultants.

Action 1

Implement management programs using environmental performance information to provide the flexibility needed to meet specific requirements of regulated activities in the following ways:

- Tailor programs and provide technical assistance to create an economy of scale among small businesses to improve environmental performance (e.g., agglomeration or clusters).
- Tailor programs to recognize the specific regulatory and environmental performance issues associated with important industrial sectors (e.g., the U.S. Environmental Protection Agency's [EPA's] Common Sense Initiative for the Metal Finishing Sector).

Recommendation 5

Promote high performance.

Excellence will find its reward in public recognition and the marketplace. Government programs, however, should aim both to help align market rewards with good environmental performance and design program or system changes to reward that achievement. Environmental performance programs should be designed to encourage and provide incentives to companies and organizations that consistently outperform existing environmental requirements and that are committed to continued environmental excellence and improvement. Top performers with the ability and commitment to ensure high levels of environmental protection should be aided and benefited by market rewards, public recognition, and increased operational flexibility.

One way to help motivate companies to pursue excellence in environmental management is to establish programs for alternative regulatory strategies, sometimes referred to as a “greentrack” or “alternative path.”²⁷ Participating companies could propose process-specific operational changes and alternative strategies leading to both high environmental performance and increased profitability.²⁸ Businesses that outperform existing environmental requirements and continually improve perfor-

Environmental Management Systems (EMS) Incentives Project. In 1997, the Oregon state legislature passed “green permits” legislation to encourage regulated facilities to achieve environmental results that are significantly better than otherwise provided by law. The EMS Incentives Project is one approach that Oregon Department of Environmental Quality believes will achieve the environmental results envisioned in the legislation. The project uses a tiered system in which greater environmental performance is rewarded with increasing regulatory benefits. For participating companies, compliance with standards is the baseline level of performance required under the program. Measurable environmental performance goals are established, and public reporting and meaningful stakeholder involvement are expected. The three-tiered system requires demonstrated reductions in targeted environmental impacts; the highest and second highest tiers must demonstrate that the facility is in the top 10 percent and 25 percent, respectively, of industry environmental performance. Incentives include public recognition as an environmental leader, regulatory and operational flexibility, and technical assistance.

mance over time would benefit from the economic and administrative certainty of such a program. As a condition, they would be expected to report verified performance information to government and the public.

It is crucial that proposals by a firm under any alternative regulatory strategy result in an overall environmental improvement over what the firm is required to do otherwise. Therefore, such approaches must employ quantifiable environmental performance measures and effective enforcement mechanisms specifically targeted at, among other things, the areas in which the firm has been offered regulatory flexibility to ensure that performance is improving.

Government must be able to verify and enforce this performance at least as reliably as it can under the present system. Similarly, in the case where a firm is receiving regulatory benefits different from those under existing programs, the proposed alternative should confer a recognizable net benefit to society.

Current alternative regulatory programs are in the developmental and experimental stages. Such programs must establish clear goals, guidelines, and performance measures for their success to be replicated more broadly; to maintain the fairness of the system; and to ensure public confidence. These programs must also be designed to address concerns that small businesses may not benefit equally, and that program design and monitoring may demand additional resources from government and stakeholders.²⁹

Action 1

Develop a voluntary program that motivates and rewards

high environmental performance and confers a net benefit to society.

Action 2

Define characteristics of good and outstanding environmental performers (e.g., compliance history, modern environmental management systems, continual improvement, pollution prevention, reported results, etc.).

Action 3

Develop incentives for voluntary participation (e.g., operational flexibility, system of rewards/recognition, fast track, preapproval, multimedia, etc.).

EPA's New England regional office is piloting the StarTrack program as a means of achieving better environmental performance through the use of environmental management systems and third-party certification. Companies participating in StarTrack are required to have an established compliance auditing program and demonstrated commitments to compliance, pollution prevention, and continuous improvement of environmental performance. To meet program requirements, companies conduct comprehensive compliance audits and environmental management systems audits. Qualified independent third parties review and certify the audits. Action plans must be developed to address any areas of non-compliance and any areas needing improvement in the environmental management system. Each company prepares and makes publicly available an annual environmental performance report. If successful, this program has the potential to produce improved environmental protection, improved public understanding of companies' environmental performance, and improved efficiency in the use of public and private resources. Moreover, by monitoring and reducing the environmental impacts of performance, flexible operational alternatives can be identified and adverse effects prevented in a more verifiably routine manner.

The Licensed Site Professional (LSP) program of the Massachusetts Department of Environmental Protection is an innovative bridging of government and private sector resources. It uses licensed nongovernment professionals to oversee contaminated site cleanups, thereby accomplishing more cleanups than if the state reviewed all sites on its own. Although the state still maintains oversight responsibility at a small number of sites that have been identified as the most serious and/or complex, private LSPs are responsible for approving the key response actions at all other sites, using the redesigned remedial program as their guide. Responsible parties and their LSPs must follow the processes and meet the standards specified by the state, document actions taken, and provide an "opinion" from the LSP stating that the cleanup work complies with state requirements. Thus, those who wish to proceed rapidly with cleanups can do so without delays occasioned by shortages of state staff time. This system has accelerated cleanups statewide without reducing environmental standards.

Action 4

Provide administrative tools and incentives to motivate middle-tier performers to achieve the standard of excellence set by high performers.

Recommendation 6

Align with the economy.

All environmental management programs need effective methods to assess environmental performance and ensure public confidence in the system. However, information technology allows far more rapid change in production processes and products than was previously possible. More than ever, companies need to be able to change their processes rapidly to maintain economic competitiveness. Government can and should do its best to reallocate, adapt, and adjust its environmental management capabilities to keep pace with expansion and change in the economy - currently, it is a significant challenge to

align environmental protection efforts with the economy. In the future, public and private institutions will need to evolve together as economic activity continues to grow and the environmental management framework becomes more complex, flexible, and diverse.

The number and types of activities that affect the environment change with the economy. By contrast, changes in the environmental management framework (arising from both the public and private sectors) that would improve efficiency and effectiveness are not always in sync with fluctuations in the economy; for example, environmental agency and program resources often lag behind economic improvement. Consequently, the environmental protection system can suffer in its effectiveness or become an unintentional bottleneck, and frustrations grow on all sides.

A new environmental management framework must

anticipate change and strive to evolve. Indeed, mechanisms that act to ensure that environmental protection automatically matches changes in the economy are in various stages of development. For some of those systems, a significant infrastructure and an assessment of performance is still needed. Potential mechanisms include market-based programs and charges for some programs; the use of qualified third parties (who are neither the regulated nor the regulator) to document and improve environmental performance; and the adoption of environmental management systems (EMSs), including firms' growing use of the ISO 14001, the international environmental management systems standard of the International Organization for Standardization (ISO). (For more information, see appendix B-2.)

Market Mechanisms. Market-based programs and charges use regular market functions to protect the environment. Under these systems, the cost of pollution is set by the market, and costs to companies are linked directly to their environmental performance. Companies thus have increased incentives to reduce these costs through innovation. The government plays a very different role in this sort of system than it does in most other environmental protection programs. Its primary role is to maintain the integrity of the market, ensuring that companies are actually buying and selling what they report. The government also must ensure overall progress toward environmental

Environmental performance and environmental management apply to communities and geographic regions as well as to businesses and industrial sectors.

goals. Market mechanisms cannot be successfully applied to all environmental problems; for example, where pollutants are not readily monitored and establishing a baseline for trading or validating reductions is difficult.

Environmental Management Systems. There is widespread and growing use of environmental management systems by organizations domestically and abroad as the inherent benefits of these systems are recognized. The Council believes there is potential in their use in promoting high environmental performance; however, the link to performance improvement has not yet been made. An environmental management system can be a significant tool for sustainable development if the link to verifiable, credible reporting is made and performance improvements demonstrated. Alone, environmental management systems (including properly certified ISO 14001 systems) do not necessarily ensure improved environmental compliance and performance (see appendix B-2). Rather, effective environmental management systems can provide significant structural support for improving performance if coupled with qualitative and quantitative performance commitments and goals. To make such environmental improvements, systems must be in place and producing verifiable performance results.

Third-Party Certification and Auditing. Private sector third-party certification and auditing company services are used by firms to review corporate environmental management activity. These third parties can be used to review permits, certify environmental management systems, audit compliance, or verify environmental performance results and reporting. A commercial industry of highly qualified and competent third-party certifiers and auditors (analogous to financial auditors who certify the accuracy of certain segments of the financial system) could be an important feature of a more diverse environmental management framework. These services could be used by high-performing organizations as part of their alternative regulatory strategies; firms interested in partially outsourcing aspects of their environmental management functions;



The Bronx Community Paper Company, a 100% recycled paper mill, was planned by the Natural Resources Defense Council and designer Maya Lin in collaboration with south Bronx community groups. Constructed on a brownfield, the mill will recycle wastepaper, clean up and reuse sewage water, and produce livable wage jobs in the poorest census tract in New York City.

Photo: Maya Lin and Natural Resources Defense Council

and, potentially, government agencies to augment their oversight activities.

Currently, the field of third-party certification is in its initial stages of development, and fundamental design and oversight issues must be addressed. Private auditing arrangements can supplement, but do not replace, governmental oversight. However, such an industry could augment government inspection efforts, adapt more quickly to changes in the economy, and help ensure the public's confidence in the new environmental management framework.

Once developed, an effective third-party system would need to maintain very high standards. That is, it is necessary to ensure that what the recognized third-party certifiers have approved should, in fact, have been approved. Any auditing system (public or private) can fail: auditing standards may prove ambiguous; auditors can be lax, poorly qualified, or incompetent, or may be deliberately misled. Existing financial auditing and accounting systems occasionally fail; a similar failure in an environmental auditing system could have disastrous effects on human health or the environment. Safeguards need to be put in place to prevent such harms where auditing systems fail. For instance, poor-performing auditors should be penalized through disqualification, civil liability, or criminal sanctions.

In systems of this kind, the government's ability to establish and enforce environmental standards, and ensure the veracity of a limited number of validated certifiers, is essential to environmental protection. Equally essential would be the maintenance of clearly defined auditor quali-

fication standards, which may be based on voluntary consensus standards where practical. Comparable programs should be available to both small and large businesses. Properly designed, such programs should complement and enhance community involvement.

All parties — government, business, and the public — could potentially benefit from the services of a vibrant third-party certification and auditing industry where the participants are qualified and competent. Governments can serve as a catalyst for this by providing guidelines that can be used for accrediting third-party certifiers and auditors under certain conditions; creating voluntary programs that stimulate a demand for this new service; and in helping to maintain strict standards for third-party certifiers and auditors. As part of the activity relating to this area, governments should evaluate whether any new programs realize the anticipated environmental protection, flexibility and gains, and resource savings.

Action 1

Environmental management systems (EMSs) of high-performing organizations can and should include mechanisms for successfully ensuring compliance accurately measuring and reporting performance. Systems may vary by size and type of organization, but comprehensive EMSs used by high performing organizations would share the following characteristics:

- A plant-specific EMS, or corporate-level, system implemented at the plant level;
- Accepted corporate environmental principles, policies, and goals;
- Commitment to compliance baselines and continually improved performance;
- Identification and prioritization of environmental aspects and impacts;
- Environmental performance metrics/indicators;
- Sufficient public involvement and public reporting to permit meaningful understanding of facility management, performance, and compliance status;
- Pollution prevention, design-for-the-environment, and life-cycle approaches;
- Supply chain and extended product responsibility efforts;
- Environmental accounting;
- Periodic system evaluation or auditing;
- Provisions for corrective/preventive action with regard to identified problems; and
- Senior-level responsibility and interdepartmental agreement.

The policy of the Cape Cod Commission is to create diversified, sustainable development in the Cape Cod region. A regional approach is used to address environmental resource issues that cross traditional boundaries. The Commission encourages economic activities that minimize harmful impacts on the environment and society, while avoiding the after-the-fact regulatory battles and cleanup bills. The Commission embraces attempts to balance the competing needs for economic opportunity, social equity, and preservation of the historic and ecological legacy unique to the region.

The 14 river communities designated by a federal advisory committee under the American Heritage Rivers Initiative are experiments in how to combine economic development, environmental preservation, and cultural identification in positive community initiatives. All of this initiative's ongoing efforts relate to the federal Clean Water Action Plan.

The Global Action Program in New York tries to empower individual households to change personal behavior and to move consciously towards sustainable consumption. “EcoTeams” organize communities and households to analyze consumption patterns to reduce waste in the use of energy, transportation, and water resources. These EcoTeams work together and report their results to a national office, and their performance is compared to other teams. The impacts of EcoTeams are felt in homes and communities.

The New Jersey Department of Environment’s Watershed Management Approach was developed to improve surface and groundwater quality and quantity for all uses with a performance-driven environmental management framework. New Jersey residents take on the responsibility of serving as stewards for their own watersheds. Information is acquired by the stakeholders (including NJDEP) and then is developed into a watershed management plan, which drives activities and investments in the geographic area. This approach allows stakeholders to determine the priority of problems and builds a better understanding of the environmental impacts of everyday activities.

Action 2

Encourage federal and state agencies to develop and test voluntary incentive-based programs involving the use of accredited third-party certifiers and auditors to:

- Certify environmental management systems (including properly implemented ISO 14001s);
- Conduct periodic, verifiable auditing of environmental compliance and performance, and review findings with appropriate agencies; and
- Create and provide public reports of environmental management and performance to allow for meaningful public understanding.

Action 3

Develop performance goals and program incentives for enrollment in the above-described programs. Companies seeking performance review, certification, and audit results in such administrative and regulatory programs must have a history of good compliance and environmental management systems that measure environmental performance and compliance.

Action 4

Conduct a critical review of current programs and policies for the accreditation of third-party certifiers and auditors by a panel of experts from business, the financial community, environmental organizations, federal and state regulators, and community representatives to determine what, if any, additional guidelines and institutional changes are necessary or desirable.

LINKING PLACES AND STRATEGIES

Connections to our community and a sense of place have long contributed to the quality of our lives. In many ways, these values are hard to explain, and their existence is even harder to prove. Nevertheless, the strength and breadth of community bonds, as evidenced by support for local sports teams or allegiance to schools and neighborhoods, demonstrates their importance. People value connecting with others, and this affinity is the wellspring of community. And when they do make these connections — through parent associations at school, churches, and synagogues, or block organizations — they are able to fix problems and make progress in ways that they could not have done individually.

The Council believes that improving environmental quality is everyone’s responsibility. Environmental performance and environmental management apply to communities and geographic regions as well as to businesses and industrial sectors. The combined performance of businesses, civic government, community organizations, and public associations can greatly enhance the value and benefits of local citizenship when organized to achieve environmental outcomes that foster sustainable development. Because the actions one group takes have an effect on the others, identifying these linkages also allows community members to recognize that social, economic, and environmental opportunities are often interdependent.

A new environmental management framework that supports sustainability needs to respect and incorporate the value of community and places, while at the same time ensuring that all communities have minimum baseline standards of environmental protection. It should also extend expertness and assistance to places experiencing

Minnesota’s St. Paul Port Authority’s brownfields redevelopment program is one of 16 “showcase communities” and has over 50 sites needing redevelopment. Due to scarce resources, the Port Authority determines which sites to remediate based on the extent of redevelopment costs, site configuration, and a variety of social justice indicators such as the level of unemployment, housing vacancies, and percentage of rental property. The redeveloped land is given away to businesses, which enter into an agreement with the Port Authority to retain and attract businesses to St. Paul. Agreements include design criteria relating to energy efficiency, local hiring guarantees for St. Paul residents, and livable working wages. The program is a success: the Port Authority has three to four businesses competing for each available opening. This program has generated over \$2 million a year in property taxes, created over 1,500 job in distressed communities, and created 900,000 square feet of building space in previously abandoned lots.

adverse environmental consequences to find and implement collaborative solutions that reduce those impacts. Strategies that engage the community in monitoring environmental problems and crafting solutions have many advantages. They create a forum for debating tradeoffs that may be necessary; they tap the opinions and expertise of people with diverse views and talents; and they can catalyze cooperative action.

R e c o m m e n d a t i o n 7

Foster a collaborative regional approach to environmental protection.

Generally, environmental management is place-dependent. Air emissions, however, can concentrate in a relatively small area or cross jurisdictional boundaries, depending on the characteristics and size of the airshed and source of the pollution. Similarly, contaminants released to water can be dispersed through a watershed or can concentrate in sediments. Pollutants spilled on land often make their way to the waters within a watershed, and ultimately the ocean, as rains create soil erosion and stormwater runoff, or as the pollutant seeps into groundwater. Since contaminants move from place to place, com-

munities in one place cannot disregard the fact that contaminants travel elsewhere.

Solutions to environmental problems therefore must be place-sensitive, identifying specific problems affecting an air- or watershed, the sources of the problems, and how each source contributes to them. Solutions can be strengthened by building on the regional nature of some environmental concerns,³⁰ and by tapping the resources and expertise of affected jurisdictions to devise and implement solutions.

Regional, state, and local collaboration are essential in achieving sustainable environmental management, especially in natural resource and land use decisions. Regional- and state-level collaboration can take multiple forms and occur at different points in the same geographic area. For example, a collaboratively conducted “sustainability inventory” — an assessment of environmental impacts affecting an

The environmental management framework needs to test and adopt new approaches. . . The result will be a system that is less uniform and more complex but also more flexible.

area or region and of the availability of resources needed to make progress — can provide a context for individual initiatives to enhance sustainable development. Target indicators for sustainable development include, for example, water use, air and water quality, energy consumption, solid waste, education and business infrastructure, transportation, natural resource assets, and overall economic progress.

“Even in the face of scientific uncertainty, society should take reasonable actions to avert risks where the potential harm to human health or the environment is thought to be serious or irreparable.”

— *Sustainable America*, 1996

Regardless of the form, collaboration can embrace a variety of community-based, intergovernmental, and market-based



Photo: Stephen Delaney, U.S. Environmental Protection Agency.

approaches.

Action 1

Foster regional and multijurisdictional approaches to environmental protection (e.g., to address land use, transportation, etc.), while maintaining national standards.³¹

Action 2

Develop and use strategic assessments of regional economic opportunities that support and are specific to watershed management approaches (e.g., Clean Water Action Program).

Action 3

Develop new mechanisms to attract capital to redevelop brownfields (with the overall goal of increasing the ratio of brownfields to greenfields use).

Action 4

Implement and apply sustainable development inventories to assess community environmental impacts, economic opportunities, and natural resources in a comprehensive manner.

Action 5

Encourage businesses and local governments to work with communities in setting environmental priorities for sustainable economic development and land use planning. (e.g., smart growth, smart transportation, redevelopment, etc.).

Recommendation 8

Involve individuals and communities in improving environmental performance.

Perhaps one of the biggest hurdles in moving towards sus-

tainability is overcoming the lack of awareness about the environmental impacts of the lifestyle choices we make. Individuals make decisions every day — where to live, what form of transportation to use, what products to buy — that, in the aggregate, can lead to large-scale environmental impacts that are difficult to manage. In most cases, people make these decisions without adequate information, and often without any idea of the potential environmental consequences. Similarly, communities make decisions about zoning, housing, schools, transportation, and other pressing issues without accurate information on the relative environmental costs of their choices.

Governments, educational institutions, and businesses need to build a more common understanding of how the products we buy, the policies we adopt, and other everyday choices we make affect sustainability. While the Internet has made vast amounts of data widely available, we still face enormous challenges in turning data into useful information that can help people make choices, reaching people at all levels of society, integrating environmen-

For years, the San Francisco Bay has been subject to a buildup of copper pollution. Even though point source controls are fairly effective, copper in the Bay remains a problem. Recent studies indicate that the majority of copper pollution comes from nonpoint source runoff, with automotive brake pads accounting for 80 percent of the copper source. Copper from brake pads emerged as a water quality problem after regulation eliminated the use of asbestos in brake pads, and copper was substituted to meet automotive safety standards. In response, industry, government, and environmental leaders promptly formed the Brake Pad Partnership Project, a voluntary industry program to reduce the use of copper. The project establishes specific percentage reduction goals, and is proposing a research program to develop a methodology to fully evaluate the potential impacts of copper and other ingredients proposed for use in brake pads.

tal knowledge and problem-solving skills into our educational system, and building a sense of individual responsibility for the environment.

Action 1

Provide information to and educate consumers and individuals about environmentally responsible household,

lifestyle, and product choices.

Action 2

Develop and provide information to citizens and elected officials about the effects of proposed and existing government policies on sustainable development.

Recommendation 9

Identify risks and protect communities against disproportionate impacts.

It is argued that some low-income and minority communities have lacked equal environmental protection and have borne disproportionate or cumulative environmental burdens.³² Any future environmental framework must have processes in place to identify risks and ensure that environ-

CHAPTER 4
METROPOLITAN AND RURAL
STRATEGIES

mental burdens are reduced, and that environmental protection is shared throughout and across all communities. Therefore, organizational responses need to focus on increased involvement of community representatives and interest groups in projects with environmental impacts.

Although several mechanisms are available to redress

“Encourage people to work together to create healthy communities where natural and historic resources are preserved, jobs are available, sprawl is contained, neighborhoods are secure, education is lifelong, transportation and health care are accessible, and all citizens have opportunities to improve the quality of their lives.”

— *Sustainable America*, 1996

environmental impacts, it is more important to identify and prevent the conditions that can create inequities between communities. By taking steps to identify potentially inequitable environmental impacts, communities can begin to integrate sustainable development principles and practices fully. One step to prevent such impacts is to incorporate community issues early on in the decision-making processes of industries, government, and other relevant entities. Communities can increase their economic potential, quality of life, and overall livability if mechanisms are established to ensure that community representatives (not local government officials alone) are collaboratively involved in decision-making processes affecting the community.

Action 1

Develop and use sustainable development indicators to identify possible disproportionate economic, environmental, and social impacts on urban and rural communities.

Action 2

Collaboratively negotiate capital investment strategies for developing local economic opportunities that simultaneously address possible disproportionate impacts.

Action 3

Develop incentives that encourage organizations that achieve high levels of environmental protection to invest in economically distressed areas and hire employees from those distressed communities at unreduced wages.

Action 4

Adopt public and private sector approaches for environmentally and economically distressed communities that allow additional economic development while reducing total environmental burdens.

NEW APPROACHES TO PERSISTENT PROBLEMS AND EMERGING ENVIRONMENTAL ISSUES.

Although the United States has made great strides in addressing environmental problems, the nation and the world still face significant environmental challenges. Environmental professionals, lawmakers, nongovernmental

Whether individuals and institutions restore their watersheds, champion more efficient use of land, create accessible transportation alternatives, make housing more affordable, link people with quality jobs, preserve their cultural and ecological resources, or create new environmentally sensitive businesses, they can improve the lives of today’s citizens while safeguarding their communities for future generations.

organizations (NGOs), businesses, and others are struggling to understand and devise solutions to persistent and complex environmental problems as well as to new environmental challenges. Some of the persistent and complex environmental problems facing us today include pollution from myriad small, dispersed sources that are not easily reached through conventional regulatory approaches, but that cumulatively contribute significantly to pollutant loadings. Other challenges include land-based activities that create local problems — such as inadequately controlled land development (i.e., urban sprawl) and agricultural runoff — that are best addressed in the context of local community decisionmaking.

New issues doubtless will emerge in the next century that will also demand attention. These environmental

challenges include global issues — such as climate change and long-range transport of persistent pollutants — that involve complex interactions between human activity and natural systems.

Recommendation 10

Develop new approaches to persistent problems and emerging issues.

To address both currently recognized environmental problems and those yet to be identified while moving towards sustainability, the environmental management framework needs to test and adopt new approaches. We need to enhance our ability to rethink the nature, source, and linkages of environmental problems by continuously learn-

KEY FINDINGS - METROPOLITAN AND RURAL STRATEGIES

- **The imperatives of sustainable community development are gaining momentum.** There are hundreds of initiatives around the country that are finding sustainable solutions to pressing local and regional challenges. In the process, these initiatives are finding or rediscovering new economic, ecological, and social assets that can strengthen and enhance their communities.
- **The Council identified five strategic opportunity areas for sustainable community development — green infrastructure, land use and development, community revitalization and reinvestment, rural enterprise and community development, and materials reuse and resource efficiency.** Sustainable community development does not constitute a single fix or solution. Instead, communities need multifaceted solutions. By undertaking sustainable strategies that address each of these five areas, communities can realize significant and synergistic benefits. When invested in collectively, the five areas comprise a comprehensive approach to sustainable community development.
- **Successful initiatives share seven common characteristics that should inform and guide the development of policies and projects.** Successful initiatives: (1) serve, invest in, and respect people; (2) invest in and respect places; (3) align with or create new market forces for sustainable development; (4) leverage their ecological and social, as well as economic, assets; (5) constructively address issues of race and class; (6) build regional and multijurisdictional alliances; and (7) are locally driven. In particular, successful initiatives understand the intrinsic value of “place.” They recognize that challenges extend beyond artificial jurisdictional lines and attempt to create regional solutions. They also recognize that challenges and opportunities can be best addressed by networks of people with diverse backgrounds, views, and experiences working together in inclusive planning and decision-making processes.
- **To overcome major implementation obstacles, communities need three types of tools and resources: information and technical assistance, economic incentives and financial assistance, and local capacity and partnerships.** Numerous stakeholders — including federal, state, local, and tribal governments; community-based and environmental organizations; and the private sector — must work together to empower communities with the tools they need to develop sustainably.
- **To accelerate the pace of sustainable community development, we must make the most of existing authority and resources to empower communities.** By immediately undertaking new initiatives and building on initiatives already under way, we can significantly enhance local capacity, leverage markets, and strengthen multijurisdictional and regional partnerships within the next three years.

ing from and using past experience to improve current performance. In the environmental field, that requires trying to understand who pollutes and why, and how their decisions are affected by those of others.

To deal with this broadening set of problems, the framework will, in the next century, include both traditional tools (national standards, permits, reporting, enforcement, etc.) and new approaches (market- and information-based approaches, stakeholder participation in decisionmaking, performance-based standards, etc.). Only those tools that best address a given problem in the most effective, efficient, and just manner will be applied to that problem. The result will be a framework that is less uniform and more complex but also more flexible. Such a framework will facilitate the development and tailoring of strategies that allow specific problems and opportunities to be identified and addressed.

Within the new framework, too, more research, sophisticated databases, and analysis are needed to identify systemic problems and major sources or causes of

Promote early action on emerging issues by involving companies, NGOs, government stakeholders, and international partners in constructive dialogues on issues that will lead to solutions.

Action 2

Improve information strategies for emerging issues by securing commitments to support anticipatory research; and develop databases and analyze information to investigate unknown risks and understand the magnitude of their environmental and health impacts (e.g., endocrine-disrupting chemicals).

Action 3

Apply focused strategies to existing environmental problems that are inadequately addressed by traditional systems or programs (e.g., nonpoint source water pollution and dispersed air sources).

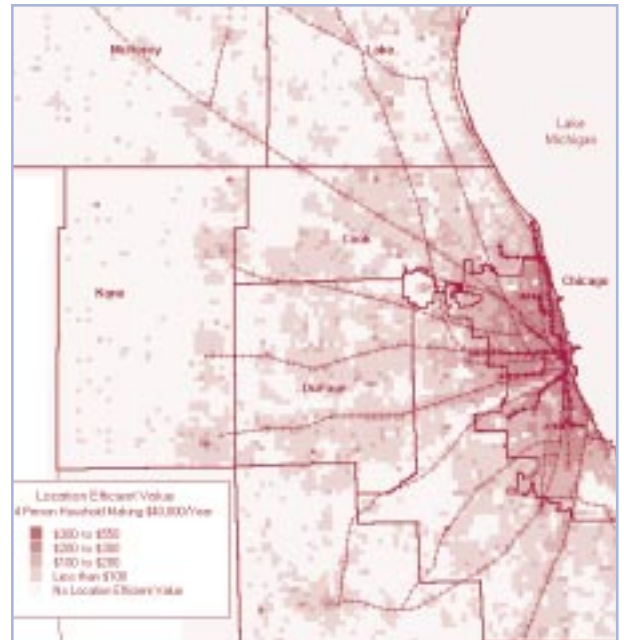
As we attempt to solve global issues in the 21st century, we need to strengthen our international partnerships. We have much to share with other nations that are striving

Place-based strategies, which acknowledge the unique qualities and concerns of different places, are essential to building more healthful, enduring, and livable communities.

problems. For example, endocrine-disrupting chemicals are emerging as a potential global issue, but the sources and effects of these chemicals are still not well understood.

Foresight is a crucial element of sustainable development, and essential in a new environmental management framework. For example, the Swedish government has established goals for the phaseout of certain persistent substances in products. A “reverse engineering” process to determine how to reach the goals is being implemented in the hope of fostering innovation without creating new risks. By focusing on alternatives, goals, and severity of effects, the debate is shifted from causality to solutions. A process that weighs evidence about harm, but considers it in the context of available technologies and methods that eliminate or reduce the severity of the impacts, is critical to good decisionmaking.

Action 1



Savings calculated for a four-person household earning \$40,000 annually in the Chicagoland area depends on the household's location near transit and places to work and shop. High values for households located near amenities such as rail lines suggests that these households save more money because they are location efficient.

Image: Center for Neighborhood Technology, Natural Resources Defense Council, and the Surface Transportation Policy Project.

for sustainability, and also much to learn from them. Organisation for Economic Co-operation and Development countries with parallel economic and environmental histories, such as the United Kingdom, the Netherlands, Denmark, Germany, and Canada, offer valuable lessons that should be shared with U.S. communities and regulatory agencies. Such sharing is evident in New Jersey's recent inclusion of Dutch pollution prevention policies, Chattanooga's and Cape Charles's use of Danish ecological industrial parks, and Wisconsin's adoption of German acid rain programs.

The Council urges national and international governments, businesses, and NGOs to advance the dialogue about emerging environmental issues wherever possible. In the 1980s, the discovery of the ozone hole over Antarctica galvanized international action, resulting in the Montreal Protocol agreement to phase out the production of ozone-depleting chlorofluorocarbons (CFCs). Key to the protocol's success was the general acceptance of the need for action, and consensus on what that action should be, by the various national governments, NGOs, and CFC-producing and -using businesses. We need to produce more of this kind of progress in concerted international efforts as we face the challenges of the future.

“People say their new communities have become too dependent on the automobile, too removed from nature, too close to the clutter of box retail stores.”

—Timothy Egan, “The New Politics of Urban Sprawl,”
New York Times, November 15, 1998, p. 44.

INTRODUCTION

This chapter addresses a fundamental question: How can we, as a nation, help sustainable community initiatives move from vision to action?

In *Sustainable America*, the President’s Council on Sustainable Development (PCSD) presented a vision of community development that encompassed economic, envi-



As part of the growth management plan for Portland, the state of Oregon coordinates a program designed to encourage builders to construct “transit-friendly” developments.

Photo: Center of Excellence for Sustainable Development.

ronmental, and equity concerns — a vision inspired and informed by the collective aspirations and experiences of communities around the nation.¹ It presented an urgent case for communities to confront specific challenges and embrace new opportunities to enhance their current and future well-being. Most importantly, *Sustainable America* affirmed the national importance of building vibrant, healthy, and livable communities. Since its publication, the imperatives of sustainable community development are increasingly taking hold, gaining momentum, and producing benefits. As aptly summarized in a September 1998 speech by Vice President Gore, “While the blight of poor development and its social consequences have many names, the solutions, pioneered by local citizens, are starting to coalesce into a movement. In the future, livable communities will be the basis of our competitiveness and economic strength.”²

Over the past five years of the Council’s work, we have

observed considerable innovation in how people with different interests can act collectively to build enduring and livable communities. In hundreds of communities and regions across America, community leaders representing citizen groups, elected officials, businesses, and other stakeholders are rolling up their sleeves to engage each other and work together. In particular, these leaders are recognizing the intrinsic value of the places in which people live, work, and visit. And they are taking bold and creative actions to preserve and enhance the economic, ecological, and social assets of their communities.

Sustainable community development embraces a vast range of opportunities and options. Based on our review of initiatives and activities from around the country, we have found that five broad areas of sustainable community development hold particular promise and potential: green infrastructure, land use and development, community revitalization and reinvestment, rural enterprise and community development, and materials reuse and resource efficiency. These areas are not discrete; rather, they overlap and complement one another. By undertaking sustainable strategies within each of these five areas, communities can realize significant and synergistic benefits. When invested in collectively, the five areas comprise a comprehensive approach to sustainable community development. Whether individuals and institutions restore their watersheds, champion more efficient use of land, create accessible transportation alternatives, make housing more affordable, link people with quality jobs, preserve their cultural and ecological resources, or create new environmentally sensitive businesses, they can improve the lives of today's citizens while safeguarding their communities for future generations.

The Council has also found that successful initiatives share several common characteristics that should inform and guide policies and programs. There is no denying the power of example these efforts provide. But although we are witnessing more successes, most sustainable community development initiatives face daunting technical, financial, and institutional obstacles. In order to fulfill the promise of sustainable communities affirmed in *Sustainable America*, we must find ways to overcome obstacles and replicate those strategies that are working.

In this chapter, the Council recommends policies and actions that advance three types of tools and resources to enable metropolitan and rural communities to overcome obstacles and move forward: (1) information and technical assistance, (2) economic incentives and financial assistance,

and (3) local capacity and partnerships. Our specific recommendations identify how the federal government; state, local, and tribal governments; the private sector; and community-based and environmental organizations can work together to empower metropolitan and rural communities with the tools they need to develop sustainably.

To accelerate the pace of sustainable community development, the Council also believes we must make the most of existing authority and resources. By immediately undertaking new initiatives and building on initiatives already under way, we can significantly enhance the knowledge, skills, and capabilities of all stakeholders by building local capacity, leveraging markets and financial intermediaries, and strengthening multijurisdictional and regional partnerships within the next three years.

FIVE STRATEGIC AREAS OF SUSTAINABLE COMMUNITY DEVELOPMENT

Five areas of sustainable community development hold particular promise and potential. If addressed collectively, these five areas also provide a comprehensive approach to sustainable community development:

- **Green Infrastructure.** The pace, extent, and intensity of human activities place great burdens on ecosystems and natural resources across the country. “Green infrastructure” is the network of open space, airsheds, watersheds, woodlands, wildlife habitat, parks, and other natural areas that provides many vital services that sustain life and enrich the quality of life.^A To obtain these benefits, many communities are increasingly promoting place-based approaches to conserve, protect, and restore local and regional systems of natural resources and amenities. The objectives of these green infrastructure strategies are somewhat different from those of traditional conservation efforts. While traditional conservation focuses on environmental restoration and preservation, it often neglects the pace, shape, and location of development in relationship to important natural resources and amenities. Green infrastructure strategies actively seek to understand, leverage, and value the different ecological, social, and economic functions provided by natural systems in order to guide more efficient and sustainable land use and development patterns as well as protect ecosystems.^B
- **Land Use and Development.** Over the last several decades, sprawled development — characterized by low-density, single-purpose land use; ad hoc, disjointed planning; discontinuous “leapfrog” development patterns; and excessive consumption of greenfields — has exacerbated economic, environmental, and social problems.^C “Sprawl” is inefficient land development that fails to value the overall design of a community or region, or its intrinsic ecology. It’s estimated that, on average, each person uses four to five times more land for roads, homes, and shopping now than 40 years ago.^D Recognizing the problems of sprawl, communities are increasingly adopting what is being called “smart growth,” a term that describes the design and management of the physical expansion of existing communities and the creation of new ones so as to decrease sprawl, conserve open space, reverse disinvestment in existing communities, respect nature’s carrying capacity, increase social interaction, and provide protection from natural hazards — in short, to make communities more livable. Smart growth is not anti-growth. Rather, it addresses inefficient and haphazard growth. Smart growth links development decisions with quality of life, while monitoring and understanding market factors. It recognizes that where structures are built and how land is used affect lifestyles, the environment, local economies, and social interaction, determining whether land use and development is a community asset or liability.



STRATEGIC OPPORTUNITIES FOR SUSTAINABLE COMMUNITY DEVELOPMENT

The Mooser Creek watershed in southwest Tulsa, Oklahoma, is among the last remaining natural corridors in the metropolitan area. A citizens committee brought together stakeholders to discuss issues and concerns before setting goals for and planning development in the Mooser Creek greenway in ways that preserve priority areas. Here, Remington Elementary School fifth-graders build a nature trail on school grounds.

Photo: City of Tulsa, Oklahoma.

- **Community Revitalization and Reinvestment.** Historical disinvestment within older, central cities, “inner ring” suburbs, and rural areas has generated an intricate array of interlocking economic, social, and environmental challenges. These challenges concern housing, job and business opportunities, education, health care, and public safety, among others.^E To create a nation of sustainable communities, every community must be encouraged to use its local economic, ecological, and social resources and assets. These assets often include undercounted purchasing power, housing stock, transportation access, vacant and underutilized land, and biodiversity which can be found in even the most distressed and impoverished communities.^F Yet external resources and reinvestment are needed to help distressed communities leverage their assets more effectively. Entrenched poverty in central cities, older suburbs, and rural areas requires that investment and attention be redirected inward and the social costs of addressing poverty be shared by society at large. Community reinvestment is also a natural complement to smart growth. To manage future growth more effectively, we must make existing communities desirable places to live.
- **Rural Enterprise and Community Development.** The structure and assets of rural America are fundamentally different from those of the nation’s metropolitan areas. Rural communities are particularly vulnerable to economic and land development pressures, including loss of key land and natural resources due to overharvesting and sprawl, declining opportunities in traditional rural industries, and water quality concerns.^G Still, rural, suburban, and urban areas are mutually dependent; and much information and analysis is needed regarding their connections, such as those between food production, food dependence, and ecosystem management. A number of new strategies, such as community-supported agriculture, organic farming, forest conservation, eco-tourism, and other sustainable enterprises, are being developed and implemented that appreciate the fragility and vulnerability of rural economies and social structures.^H
- **Materials Reuse and Resource Efficiency.** Strategies that conserve resources and minimize waste by retaining, recycling, reusing, and remanufacturing materials are taking hold in many metro and rural communities.^I The growth in post-consumer recycling has justified the cancellation of incinerators and landfills from coast to coast in favor of materials reuse, collection, and upgrading.^J Remanufacturing previously used appliances and other products has grown into a \$73 billion industry employing 486,000 persons^K and has helped reduce the consumption of virgin materials. Often called construction in reverse, deconstruction systematically takes buildings apart and salvages materials often at the same or less cost than traditional demolition. Several cities are viewing deconstruction as a way to address abandoned buildings while also creating jobs and job training for local people.^L Dozens of new “eco-industrial” parks, where networked firms improve resource and energy efficiency by symbiotically exchanging wastes, are being developed across the country.^M

Marcel Proust wrote that “the real voyage of discovery consists not in seeking new landscapes, but in having new eyes.” Individuals and institutions are increasingly viewing their communities through the lens of sustainability, and, by doing so, are finding or rediscovering new economic, ecological, and social assets. With these new perspectives, community members are discovering new opportunities to strengthen their communities. And they are becoming more involved in local government, community affairs, and entrepreneurial endeavors to implement these opportunities.

Place-based strategies, which acknowledge the unique qualities and concerns of different places, are essential to building more healthful, enduring, and livable communities. Technically, “place” is the geographic union of natural landscapes, ecosystems, and human settlements and structures. Behavioral, social, and environmental scientists, in such books as *The Power of Place*³ and *The*

Geography of Numbers,⁴ emphasize that “place matters” and underscore what we all intuitively know: that our physical surroundings shape our thoughts and emotions, define our identity, and anchor our sense of community. And, unnoticed by most of us, place also predetermines the limits on our carrying capacity - the degree to which natural systems can sustain life and successfully accommodate human needs and activities.

By investing in place, community leaders can provide a measure of security and stability in our rapidly changing society. As economic networks and markets become increasingly globalized, people and businesses increasingly mobile, and America older and more diverse, communities are challenged with developing adaptive and flexible strategies that build on unique assets and create a sense of “why here.”

Concurrently, community leaders are recognizing

SYSTEMATIC ACTIONS TO BUILD AND SUPPORT SUSTAINABLE COMMUNITIES

There are three types of cross-cutting actions that, collectively, can support many different types of sustainable community efforts:

- Provide information and technical assistance. Information is an indispensable tool for making a credible case for action to decisionmakers and the public, selecting sustainable strategies, and evaluating progress. Information alone is not enough, however. Networks connecting individuals and institutions must exist to enable them to share that information.
- Provide economic incentives and financial assistance. Economic incentives and financial assistance can create standing for communities in the marketplace, significantly increasing their strength and potential for sustainability. In particular, market-based strategies and public sector incentives can be used to build on and strengthen local and regional assets. Individual initiatives and enterprises also need start-up and long-term financing and access to capital.
- Build local capacity and partnerships. The ability of local individuals and organizations to lead and implement initiatives is an indispensable element of success. They must be able to find common ground and build trust and partnerships among people of diverse economic, cultural, and racial backgrounds. Community groups, governments, and the private sector must also form regional and multijurisdictional partnerships in order to address sustainability

that place is defined by more than artificial jurisdictional lines. Many of the issues facing communities — air and water quality, transportation, land and natural resource conservation, affordable housing, and economic development — extend beyond the arbitrary lines of political jurisdiction. As such, regions are becoming an increasing focus of interest due to shared ecosystems, the spillover effects of actions by individual jurisdictions, and the significance of regional economies whose gross national products sometimes match or exceed those of entire countries.⁵ Because of the complexity of problems and

challenges, effective initiatives involve networks of people, places, and markets acting to achieve mutual benefits, transcending sectoral and jurisdictional divides. The creativity and dynamism of these partnership initiatives contrast starkly with stand-alone initiatives structured by government, community, or business acting in isolation.

THE MOMENTUM IS BUILDING FOR SUSTAINABLE COMMUNITY DEVELOPMENT

There are hundreds of sustainable community initiatives around the country. Although sustainable community development is a locally driven process, there are actions that multiple stakeholders can take to support it at every scale, including neighborhood, village, city, region, state, and nation. A sample of these efforts is highlighted in appendix C-1 of this report. In addition, several initiatives, listed below, have grown out of the Council's earlier recommendations in *Sustainable America* and its subsequent report, *Building on Consensus*.⁶

- The U.S. Conference of Mayors and the National Association of Counties created the Joint Center for Sustainable Communities, with the support of several federal partners, to implement the recommendations of *Sustainable America*. The creation of the Joint Center marks the first formal working partnership between city and county elected representatives at the national level.⁷
- The Pacific Northwest Regional Council, a coalition of more than two dozen regional leaders from diverse constituencies and cultures, is helping to promote inclusive collaboration on sustainable development in a region that has experienced significant population growth, rapid economic changes, escalating pressures on key natural resources, and increasing globalizing influences from the Pacific Rim and Canada.⁸
- The Bay Area Alliance for Sustainable Development

Knowledge creation through information and technical assistance is an indispensable element of sustainable community development.



The Center for Agroecology and Sustainable Food Systems at the University of California-Santa Cruz, researches, develops, and advances sustainable food and agricultural systems that are environmentally sound, economically viable, socially responsible, non-exploitative, and which serve as a foundation for future generations. Here, center staff calibrate weather monitoring equipment in the canopy of an organic apple orchard in Corralitos, California.
 Photo: Jon Kersey, University of California-Santa Cruz.

grew out of *Sustainable America's* recommendation to encourage regional alliances and collaborative processes. The Bay Area Alliance is a multistakeholder coalition representing business, environmental, governmental, and community sectors to advance sustainability in the greater San Francisco-Oakland metropolitan area.

- The Sustainable Racine initiative, supported by the Johnson Foundation of S.C. Johnson Wax, has convened hundreds of Racine, Wisconsin, residents to craft a long-range plan and goals addressing education, health, safety, economic development, and environmental stewardship.⁹
- The Smart Growth Network, a nationwide effort of several partner organizations coordinated by the U.S. Environmental Protection Agency (EPA) and the International City/County Management Association, provides information and technical assistance on sustainable land use and development.¹⁰ This effort was motivated in part by *Sustainable America's* recommendations to manage the geographic growth of existing

communities and siting of new ones to decrease inefficient land development, conserve open space, and revitalize communities.

- The Center for Neighborhood Technology, with support from the MacArthur Foundation, held regional forums in 12 metropolitan areas to advance several PCSD recommendations to foster regional collaboration on sustainable community development. In particular, these Metropolitan Initiative forums identified how the federal government could be more responsive to regional needs through better information access, policies, and coordinated investment.¹¹
- The Cape Charles Sustainable Technology Park, one of four PCSD demonstrations of eco-industrial development, completed the construction of its first phase in fall 1998. Its tenants include solar energy, food processing, and environmental consulting and technology firms; these will take up residence in early 1999. The Cape Charles development, located in one of the poorest counties in Virginia, hopes to demonstrate that business profitability, community vitality, and environmental responsibility can coexist.¹²

These activities are but a handful of efforts that reflect the growing interest and concern exhibited by numerous stakeholders for issues involving livability and sustainability. In the November 1998 elections, for example, voters' decisions on a total of 240 ballot measures approved more than \$7.5 billion in new state and local funds for an array of land conservation, quality of life, farmland and forest protection, and growth management programs and activities.¹³ In 1998, in their inaugural or "state of the state" addresses, 32 governors identified smarter land use and development, preservation of open space, and reinvestment in urban centers as crucial to their states' futures.¹⁴ Articles in mainstream journals such as *The Economist* and *U.S. News and World Report* are heralding the sustainability agendas of rural and metropolitan places, such as Chattanooga and Portland, that have greatly enhanced the economic competitiveness of and breathed new life into their communities.¹⁵ And environmental industries ranging from manufacturers of energy-efficient products to cleanup services to environmentally conscious building construction are growing more quickly than the economy at large and already represent a significant part of the economy.¹⁶

The imperatives of sustainability also resonate in the nation's capital. During the past several years, we have wit-

nanced increased engagement by the White House and federal agencies in sustainable community development. There are an increasing number of interagency partnerships such as the Brownfields Revitalization Initiative which, led by EPA and the U.S. Department of Housing and Urban Development (HUD), brings together the resources of more than 15 agencies to clean up and develop vacant, abandoned, and underutilized properties. And the Transportation Equity Act for the 21st Century, enacted in 1998, will continue the innovations begun under the Intermodal Surface Transportation Efficiency Act of 1991 to promote inclusive planning and flexible investment in transportation alternatives that can preserve and enhance the sustainability of communities.

These efforts, among many others, are coalescing into a concentrated national focus. In early 1999, the White House launched the Clinton-Gore Livability Agenda, which includes a billion-dollar initiative to provide new tools and resources to preserve green space, enhance transit systems, and pursue regional collaboration, among other goals. The Administration also proposed a \$1 billion Lands Legacy Initiative, the largest one-year investment ever in the protection of America's land resources, including wilderness, farmland, natural parks and monuments, as well as local green spaces.¹⁷ Other federal efforts include the U.S. House of Representatives' Livable Communities Task Force which considers how the federal government can support community livability.¹⁸ In early 1999, self-selected members of the Senate developed a Smart Growth Caucus to address how the federal government can support efforts by localities and regions to develop and use land more efficiently.

The growing sustainability movement in the United States is part of a global phenomena. In his review of the development patterns of 42 cities in the United States, Canada, Australia, Europe, and Asia, Peter Newman and Jeffrey Kenworthy, authors of *Sustainability and Cities*, found that nearly all of these metropolitan areas are increasingly revitalizing their central and inner areas, increasing their investment in transit, and preserving ecological resources and amenities.¹⁹

FIVE STRATEGIC AREAS OF SUSTAINABLE COMMUNITY DEVELOPMENT

From our review of these many inspiring efforts and activities, we have identified five strategic areas of sustainable community development that are producing benefits: green infrastructure, land use and development, community revitalization and reinvestment, rural enterprise and community development, and materials reuse and resource efficiency.²⁰ Collectively, communities and regions are investing ever greater amounts of resources and time in these five areas as they work to resolve pressing local and regional economic, ecological, and social challenges:

- Depletion and destruction of ecosystems and natural resources;
- Detrimental land use and development;
- Disinvestment and entrenched poverty in central cities, older “inner ring” suburbs, and rural communities;
- Unique economic and social pressures in rural areas; and
- Inefficient use of materials and resources.

Although the five areas we've identified encompass specific challenges, they also represent new opportunities to enhance local and regional economic, ecological, and social assets. Within each of these areas, metropolitan and rural communities are implementing many different types of strategies that best suit their local conditions, challenges, and needs.

COMMON CHARACTERISTICS OF SUCCESSFUL INITIATIVES

Despite the wide range of strategies and diversity of actors operating within these five broad areas of sustainable community development, we have found that successful initiatives share several characteristics. By adopting these elements of success, policies and programs conceived and implemented by all stakeholders can increase their effectiveness and potency. In particular, successful sustainable community development initiatives possess these seven characteristics:

- They serve, invest in, and respect people. Individual initiative is often the key motivating force for action. Empowered individuals make a difference in their communities. Successful strategies also strengthen interactions and learning among individuals and organizations. Through these connections, individu-

als discover ideas, better understand issues, and link to resources within and outside the community.

- They invest in and respect places. Successful initiatives recognize the intrinsic value of the places in which people live, work, and visit. They also understand that a sense of place is an important economic and social asset.²¹ As Lamont Hempel and Tom Horan argue, communities need both “roots” and “wings” to succeed at complex goals.²²
- They align with or create new market forces. A healthy market is one in which the systems and incentives exist to deliver a high quality of life for all community members continuously over the long term. Successful initiatives attempt to create new or redirect existing market forces to improve the environment, counter sprawl and disinvestment, and benefit individuals and families.

They find and then build on the local assets of their communities. Successful initiatives recognize the need to manage, protect, and build upon a community’s unique social, ecological, and economic assets. In particular, the concept of “asset-building” is gaining recognition as an essential strategy for helping low-income families move out of poverty.²³ Citizens are also recognizing natural resources as community assets, natural capital, and ecological wealth.

- They constructively address issues of race and class. America is becoming more culturally and racially diverse. Many communities are discovering the economic and social value of cultural diversity and are consciously embracing it as a community asset. They are actively building inclusive partnerships between people of different backgrounds, classes, and cultures to identify and achieve shared goals. And they are addressing the sustainability concerns of all people, not just of those who can afford it.
- They build regional alliances and multistakeholder coalitions. Successful innovations recognize that multiple stakeholders, working in inclusive partnerships, are needed to solve the complex challenges facing communities. These partnerships are even more critical given shared ecosystems, transportation, sprawl, and highly networked regional and global economies.
- They are locally driven. Successful innovations are locally driven and build on local assets while acknowledging global issues and opportunities. A top-down approach cannot unleash the local leader-

ship needed to sustain local initiatives. At the same time, the federal government can facilitate dialogue among varied interests to arrive at mutually workable solutions while protecting the national interest.

Although the duties of local and regional communities are increasing, particularly in the context of recent devolutions of responsibilities to states and localities, some traditional federal roles must be preserved. Sustainable community development does not call for diminishing existing economic and environmental laws, policies, and programs. Rather, it requires a philosophical shift in the approach we use to meet environmental, social, and economic objectives. In the development and implementation of place-based strategies, federal agencies must continue to represent and protect national interests that may not be represented by local interests in all cases, such as controlling pollution, protecting biodiversity, and safeguarding civil rights.²⁴

OVERCOMING OBSTACLES ON THE PATH TO SUSTAINABILITY

Although momentum is building for sustainability in metropolitan and rural areas, individual initiatives still face many technical, financial, and institutional hurdles. Collectively, communities must confront three major types of obstacles that not only impede the progress of individual initiatives but make it more difficult to replicate successful strategies:

- Information, technical skills, and learning networks are inaccessible or inadequate to communicate problems and benefits to the public, conceive effective solutions, and effectively guide planning and decisionmaking.
- The market often fails to value social, cultural, and environmental assets or to reward positive action to protect and conserve them. In addition, because of their relative newness, many initiatives have difficulty accessing adequate financing.
- Multiple jurisdictional boundaries and sectoral fragmentation make it difficult to solve shared challenges.

Communities can seize new opportunities and overcome obstacles to implementation, but only if they have essential tools and resources.²⁵ Based on what already is working in communities, the Council has compiled a set of rec-

ommendations that will promote flexibility, remove obstacles, and empower local initiative. The recommendations fall within three broad categories: (1) information and technical assistance, (2) economic incentives and financial assistance, and (3) building local capacity and partnerships. If acted upon, we believe these policies and initiatives would provide the needed tools to expedite and replicate successes.

Numerous stakeholders have already taken these actions to empower communities. Our recommendations of specific policies and actions, presented later in this chapter, acknowledge these efforts. But much more can be done. Key to rapid implementation of sustainable community development will be to make the most of existing

Transforming current models of development to ones that are more sustainable depends on defining the relationship between healthy communities and economic factors.

authority and resources. The federal government can continue to play a key role by coordinating and focusing its vast resources to foster regional solutions. State and local governments, community-based and environmental nonprofits, businesses, universities, foundations, and individuals also have important roles to play. In particular, by forging vital partnerships that transcend political boundaries and sectoral divides, these stakeholders can provide the necessary information, economic incentives, and financial assistance to enable communities to implement sustainable development strategies.

RECOMMENDATIONS

INFORMATION AND TECHNICAL ASSISTANCE: SUPPORTING CONTINUOUS COMMUNITY LEARNING

In a constantly changing world, a community's ability to learn will, in part, determine the degree to which it will flourish or languish. Knowledge creation through information and technical assistance is an indispensable element of

sustainable community development. However, many individuals and institutions embarking on sustainable community activities lack information on how to implement sustainable community strategies more effectively. Thus, as advocated by *Sustainable America*, "building a knowledge of the interdependence among economic prosperity, environmental protection, and social equity will help citizens understand, communicate, and participate in the decisions that affect their lives."²⁶ Much as high-performance companies invest in knowledge creation to maintain long-term competitiveness, investment in the systems that enable continuous learning for sustainability can secure a comparative advantage for communities. Our recommendations to support continuous community learning address four areas:

- Public education on sustainability is needed to make the public and decisionmakers aware of the challenges of and opportunities for sustainable community development and to make a persuasive and credible case for action.
- Learning networks and technical assistance can institutionalize knowledge and build local capacity for recognizing and solving problems, and for identifying and refining sustainable strategies.
- Communities need accessible and user-friendly information and data that are relevant to sustainable community concerns and can demonstrate the connections between the economy, the environment, and equity. In addition, improved analytical tools and methods are needed to enable better problem solving, planning, and decision-making.
- Indicators and performance measures are needed that can track performance towards desired goals.

Recommendation 1

Reinvigorate and advance public education on sustainable community development.

Action 1

The Administration, in partnership with leaders in all relevant sectors and the Smart Growth Network, should launch a public action campaign on smart growth. These partners should sponsor a five-year national campaign and dialogue addressing land use and growth issues through community and business action. The campaign should be launched at the National Town Meeting for a Sustainable America, which will take place May 2-5, 1999. The campaign should ask communities throughout America to identify natural assets and local and regional land use and



Photo: Center of Excellence for Sustainable Development.

growth issues; assess the impacts of sprawl-related problems; identify possible solutions and their benefits; identify ways to measure progress (i.e., establish indicators of progress); and make commitments to form or strengthen partnerships to implement solutions.

The campaign would link to three other efforts: (1) national incentive programs for Smart Growth and Regional Cooperation; (2) Growing Smart, a five-year project funded by the federal government which provides a compendium of useful tools for states, regional entities, and local jurisdictions to consider, adopt, adapt, and use; and (3) Land-Based Classification Standards (LBCS), a project funded by several federal agencies and the American Planning Association. LBCS standardizes a broad variety of land use and development data collected and stored at the local, regional, state, and national levels, enabling jurisdictions, agencies, and institutions to share data more easily.²⁷

Following the National Town Meeting for a Sustainable America, the Administration should work with leaders in all sectors and prominent civic journalists and media specialists to develop a communications strategy that can continue to promote, explain, and popularize sustainability and livability goals and concerns.

Action 2

The Administration, in partnership with others, should reinvigorate the Education for Sustainability program.

Federal agencies should increase their activities to promote lifelong learning about sustainable development, including the Sustainable Development Extension Network, as proposed in *Sustainable America* and *Education for Sustainability*.²⁸ The federal government should also encourage partnerships among businesses, localities, and regional organizations to develop and implement educational programs and curricula on sustainability for children and young adults. For example, corporate leaders from forest-products company Louisiana-Pacific sponsor the Portland, Oregon, crew of the Salmon Corps, a program that engages young Native Americans and other at-risk youth in the restoration of salmon habitats in the Columbia River Basin. While educating young people about their heritage and traditions, the program provides useful skills and helps restore critical salmon and wildlife habitats throughout the region. In the South Bronx, the Phipps Community Development Corporation, based at an innovative, city-funded “Beacon School,” which combines gang intervention and workforce programs with organizing around community environment and livability issues.

Recommendation 2

Institutionalize knowledge through learning networks and technical assistance.

Action 1

The U.S. Department of Agriculture (USDA) and its land grant system, responding to the mandate of the PCSD and as a part of the Sustainable Development Extension Network, should create a learning infrastructure for sustainable communities. The infrastructure will provide information on how to accomplish specific community development tasks, connect with potential regional partners, and access potential funding sources. It will do this through a “high-tech/high-touch” approach comprised of electronic, paper, and direct contact components.

As part of this effort, the Council for Excellence in Government should convene a group of partners within USDA to work with the Joint Center for Sustainable Communities in order to bring together the various technical assistance services now available within the land grant system. This group would work with the Council on Environmental Quality, leaders from all sectors, as well as USDA’s four regional Rural Development Centers, its Resource, Conservation and Development Councils, and

its Appropriate Technology Transfer for Rural Areas program. It would also link to HUD's Office of Rural Housing and Economic Development, which is creating an information clearinghouse on innovative housing and economic development strategies, as well as funding for direct grants for development projects.

Action 2

As part of a larger community-based conservation education strategy, organizations serving local government should partner with natural resource agencies to help local government managers include and value green infrastructure in community plans. Local government managers are in a key position to facilitate community involvement and spur activities that protect and sustain natural resources. The objectives here should be to increase awareness of the economic and social values associated with green

CHARACTERISTICS OF SUSTAINABLE MARKETS

Research and pilots can support sustainable community development by identifying mechanisms that can endow markets with the ability to:

- Recognize that community, cultural, economic, and ecological concerns are equally important.
- Support strategies that take the long view instead of short-term profit maximization.
- Appropriately value scarce natural resources and the services provided by ecosystems.
- Internalize the applicable real environmental and social costs of doing business.
- Ensure that all sectors benefit equitably from the wealth garnered from economic development.
- Encourage open flows of information and data to foster continuous learning, performance tracking, and accountability.
- Make appropriate capital and funding available to improve the community's quality of life.
- Encourage private sector leadership in sustainable community initiatives.
- Catalyze entrepreneurial energy that can develop and cultivate new sustainable opportunities.
- Encourage resource efficiency in the government, industry and business, and nonprofit sectors.
- Encourage mutually supportive connections

infrastructure and natural resource stewardship, provide inclusive community-driven strategic planning on future growth and development, and demonstrate improved decisionmaking through the use of environmental data and geographic information system (GIS) planning tools.

Action 3

Federal, state, and local agencies should coordinate their technical assistance programs to overcome program fragmentation and duplication. For example, the state of Maryland has created the Revitalization Center in Baltimore, which co-locates representatives from all agencies involved in revitalization and smart growth activities to facilitate greater interaction and ease of access by the communities they serve. The Multi-Agency Service Team, jointly sponsored by the Maine State Planning Office and the Maine Rural Development Council, brings together public and quasi-public sector service providers to resolve problems facing small and medium-sized secondary wood products manufacturers in the state.²⁹ Such coordinated technical assistance efforts should target underserved groups.

Recommendation 3

Disseminate and improve accessibility to user-friendly information and improved analytical methods and tools relevant to sustainable community development.

Action 1

The Administration should partner with leaders from relevant sectors to design a central, user-friendly information clearinghouse on sustainability. The federal government, community-based organizations, and national associations have already accomplished a great deal in linking sustainability information available on the World Wide Web. These partners should develop an information support system that can address questions stimulated by the National Town Meeting and facilitate information exchange among sustainable community development initiatives. This clearinghouse should also address how to reach low-income and rural communities that may not have access to Internet resources.³⁰

Action 2

Federal agencies and foundations should improve the capability of communities to use GIS information in support of place-based ecosystem management, sustainable land use, and community reinvestment. In particular, these stakeholders should support a community/federal infor-

WHAT IS RURAL AMERICA AND WHAT MAKES IT UNIQUE?

According to USDA, rural America contains 83 percent of the nation's land and is home to 21 percent of its people (*Understanding Rural America*, Washington, DC, 1995). As the vast majority of Americans have come to live in urban or suburban areas, people's notions of rural communities have become vague and probably tinged with the golden glow of commercials that glorify small town living. In reality, rural communities are based on social structures that are quite complex. Many different ways of categorizing rural communities are possible, but the most useful may be based on location relative to urban areas or special resources:

- Communities on the urban fringe are confronted with advancing suburban development. Local government officials increasingly find themselves dealing with the impacts of highway and other infrastructure decisions made by other jurisdictions. The rapid physical, economic, and social changes associated with development and population growth cause such rural communities to lose their distinct identities.
- Communities beyond the urban influence most likely retain their agricultural or other rural character. In many, however, changes in agricultural policy have had severe impacts on the small farmers who were traditionally at the heart of the communities. Their populations are declining and aging, as young people leave to seek employment elsewhere.
- Communities adjacent to special resources or landscapes fall into two very different subcategories: communities with natural resource-based economies (forestry, agriculture, fishing, and mining) and gateway communities located adjacent to special landscapes.
- Communities with resource-based economies are vulnerable to changes in national environmental policy and to inadequate management and/or depletion of their key resources. In either event, the community may confront the same problems of out-migration and declining economy that characterize other rural communities that are beyond urban influence.
- Gateway communities are those bordering public lands, including national and state parks, national forests, wildlife refuges, and heritage areas. These communities, with their scenic settings, environmental quality, and easy access to recreational activity, have been experiencing rapid change as a result of increased tourism and second (or retirement) home development. The jobs resulting from the tourism economy may be seasonal and pay only minimum wages. But these communities are also attracting the "lone eagles" — the consultants and executives who can live anywhere — and the small high-tech companies that provide well-compensated jobs. Thus, these communities face new demands on their infrastructure and rapid change in their economic base and social composition.

Building rural and urban/suburban linkages will depend on better understanding the diverse qualities of rural areas.

mation partnership in which the Secretary of the Interior would lead a four-year interagency initiative to advance the capacity of communities and regions to create and use geospatial data, and improve federal agencies' capabilities to provide community information. These agencies should provide incentives in the form of demonstration grants, training and technical assistance, or subsidies for software upgrades where needed.

Action 3

The U.S. Department of Transportation, in cooperation with EPA, the U.S. Department of Energy, HUD, and the Joint Center for Sustainable Communities, should establish a comprehensive program to develop new and improved analytical tools for land use, transportation, and environmental planning. States and localities need useful tools for analyzing and modernizing their planning laws and techniques, and for guiding public and private development in a sustainable manner. This effort should recog-

nize ongoing work by professional associations that have developed planning tools on smart growth with the support of federal funding, such as the American Planning Association's *Growing Smart Legislative Guidebook* and Clearinghouse.

Action 4

The federal government, foundations, and technical assistance providers should design and disseminate tools and methods that can assess the benefits of investments in sustainable community strategies. In particular, tools are needed that will capture the cross-benefits of investments. For example, PLACE³S (Planning for Community Energy, Economic, and Environmental Sustainability) software, a land use and urban design model sponsored by the Department of Energy, identifies the energy impacts of land use decisions. Other tools are needed to estimate more precisely the benefits of investments in green infrastructure, materials reuse and resource efficiency strategies, and sustainable rural strategies.

Recommendation 4

Promote technical assistance on the use of indicators and evaluation methods.

Action 1

Civic organizations, foundations, and other nongovernmental organizations, together with the Administration, leaders from other sectors, and the Interagency Working Group on Sustainable Development Indicators, should sponsor a series of workshops to help citizens use to existing or new tools to track progress on sustainable community development. As part of this effort, the Council on Environmental Quality should chair a working group of representatives of the National Partnership to Reinvent Government, the Interagency Working Group on Sustainable Development Indicators, and the Federal Geographic Data Committee. The working group would provide technical assistance to communities and regions that wish to develop indicators, benchmarks, or other performance measures to assist local decision-making processes.

The working group should work with the Joint Center for Sustainable Communities, which has launched a sustainable community indicators project, profiling city and country experiences with indicators. Federal agencies, organized by USDA, are working cooperatively with the Joint Center to better understand how community indicator efforts connect

to regional and national indicator efforts.

Action 2

The Administration should develop new economic statistics to measure reinvestment. As part of this effort, HUD and the U.S. Department of Commerce should develop “statistical barometers” to capture reinvestment in the renovation of commercial and residential projects and brownfields redevelopment. Presently, government statistics track the economy and economic development based almost exclusively on new commercial and residential activities (such as housing starts); this practice discourages the financial and business sector from recognizing opportunities for sustainable community reinvestment.

ECONOMIC INCENTIVES AND FINANCIAL ASSISTANCE: PUTTING “PLACE” IN the Marketplace

S*ustainable America* advocated economic development strategies that capitalize on unique local attributes and on technological advances in energy and resource efficiency, to create jobs and build strong, diversified local economies.³¹ Transforming current models of development to ones that are more sustainable depends on defining the relationship between healthy communities and economic factors.

Unfortunately, many sustainable community development efforts struggle to make markets work for them. *Green Communities, Green Jobs*, a recent study by Alice Shabecoff and colleagues for the Joyce Foundation on emerging initiatives to couple environmental protection and economic development found that (1) the systems that have successfully built the current community development industry are insufficiently market-oriented to take advantage of current forces supportive of regionally scaled sustainable development opportunities, (2) experimentation and demonstration of innovative market-based community development strategies are underway, and (3) new kinds of support systems would enable these opportunities to proliferate more readily.³²

As these initiatives evolve, they are addressing many quality of life issues including housing, land use, and

transportation.

Federal, state, and local government and community-based organizations should seek innovative and strategic partnerships with formal financial institutions such as banks, credit unions, and insurance companies to create new products and services that can help metropolitan and rural communities achieve sustainability goals. These partnerships should conduct and evaluate pilots to demonstrate feasibility and performance.

Our recommendations target seven activities that can begin to harness the power of the marketplace for sustainable community development:

- Identify and institutionalize new market-based incentives that can advance sustainable community development goals and opportunities through research and demonstration pilots.
- Broker regional alliances that link urban and rural markets. Communities can organize regional alliances that emphasize market research, technology development and transfer, collaborative approaches to ecosystem management, and other opportunities that can benefit regions.
- Enhance the capabilities and diversity of public and private financial intermediaries in order to increase access to capital. Basic community redevelopment and reinvestment requires finance. Consumers need financing to pay for greater water and energy efficiency or for more fuel-efficient automobiles. A community needs finance to promote ecologically sound industrial parks or to build training centers for ecologically minded entrepreneurs. Gaps in finance, therefore, greatly impede progress towards sustainable community development.
- Promote a shift in tax policies and subsidy reform. In *Sustainable America*, the PCSD advocated both a shift in tax policies and subsidy reform to encourage employment and economic opportunity, while discouraging environmentally damaging production and consumption decisions.
- Promote holistic economic development planning that embraces sustainability objectives. Development focused on short-term economic goals has created multiple challenges for communities in metropolitan and rural areas. Merely generating revenue and jobs, though essential, does not necessarily move a community closer to meeting its long-term needs. As a result,

more communities are asking essential, fundamental questions: Do regional and local economic development plans truly integrate quality of life and jobs programs? Do they benefit all people and pay for themselves? Do they emphasize attracting, growing, and nurturing businesses that really make sense in light of social, economic, and environmental considerations?

- Engage private sector business and industry in sustainable community development. Although many people hold strong environmental and social ideals, the primary motivation of private industries and the public at large is still the economic bottom line. Businesses must recognize that sustainable business practices are profitable. Each firm has an important role to play in moving communities towards sustainability by the way it conducts its business. Sustainable community development efforts must demonstrate that firms can improve the bottom line and help achieve larger economic, environmental, and social goals at the same time.
- Promote workforce development that links to sustainability principles. Workforce development relies upon a vast network of systems operating throughout all levels of society. It is subject to complex economic and environmental influences. Identifying, accessing, and coordinating the tremendous resources and expertise devoted to this network, in order to more fully nurture human potential to fulfill workforce needs, is one of the greatest challenges in creating sustainable communities. A key component of this challenge is to link employment and training systems to sustainable community goals and objectives. Historically, services provided to those seeking work have been fragmented. This has resulted in training and work readiness programs that are not linked to job placement activities or other support services such as transportation. But each of these services is a vital link in the chain to successful employment and retention.

Recommendation 5

Research and experiment with new market mechanisms that promote sustainable community development goals.

Action 1

Through already existing pilots, public-private partnerships should evaluate how individual development accounts (IDAs) can achieve sustainable community objectives. IDAs provide a means to build wealth for the

poor and low-income by matching savings with funds from external sources such as foundations, corporations, religious institutions, and government.³³ Building personal assets and facilitating connections to mainstream banks can be vital in building sustainable communities in distressed metropolitan and rural areas. Over 20 states have changed their policies to enable IDA experiments, many of which are being coordinated by the Corporation for Enterprise Development, a nonprofit organization based in Washington, D.C.³⁴ A 1999 initiative of the U.S. Treasury Department that mandates electronic funds transfer for federal distributions provides a unique opportunity to link welfare and welfare-to-work recipients with mainstream financial institutions.

Action 2

The federal government should work with lenders to expand research on location-efficient mortgages. The location-efficient mortgage (LEM) is intended to enable homebuyers to shift money saved on transportation costs to housing. The LEM Partnership, begun in 1996, includes the Center for Neighborhood Technology, the Natural Resources Defense Council, the Surface Transportation Policy Project, and Fannie Mae. It is conducting pilots in Chicago, San Francisco, Los Angeles, and Seattle in which first-time homeowners can qualify for up to \$35,000 more “house” for the same family income because they live near public transit.³⁵ Analyses of urban access are also under way in Miami, St. Louis, and Milwaukee. In support of proposed White House actions on smart growth and regional collaboration, leaders from relevant sectors should help EPA, HUD, and the U.S. Departments of Energy and Transportation track, evaluate, and enhance the use of location efficiency as an incentive for smart growth and sustainable development. These agencies, along with foundations, financial institutions, and community-based organizations, should also identify ways that better information can help the marketplace value location-efficiency.

Action 3

The federal government, working with state and local governments and the private sector, should provide incentives to capture the air quality benefits of compact development. A recent EPA study demonstrates that developing infill sites rather than greenfield sites on the fringe of developed areas results in lower vehicle-miles traveled because people live closer to work, schools, shopping, and other services.³⁶ This translates into lower emissions

increases. Cities and states should be able to capture these benefits where possible and apply them to requirements under the Clean Air Act. EPA, working with other federal and state agencies, should coordinate and expand existing pilot projects such as the Clean Air Brownfields Partnership Pilot and the Urban Heat Island Reduction Initiative. Also, methodologies for capturing the benefits of urban redevelopment under the Clean Air Act should be identified and ways to replicate those methodologies determined.

Action 4

Government, finance, business, foundation, and community-based organizations should periodically convene multisector “design teams” to assess the effectiveness of market-based strategies and pilots and identify new innovations. These teams would (1) inventory the capability of existing market systems and instruments; (2) exchange knowledge about potential market incentives that can meet sustainable community goals and objectives; (3) evaluate the benefits of market incentives; and (4) specify new market-based scenarios, mechanisms, and incentives that would advance sustainable community development in metropolitan and rural areas.

Recommendation 6

Broker strategic alliances between urban and rural markets.

Action 1

The Administration, working through the Council on Environmental Quality, should work together with leaders from the private sector, nongovernment organizations, USDA, other federal agencies, and state and local governments to develop strategic alliances to link urban and rural markets and foster joint development opportunities. A memorandum of understanding should be used to organize regional alliances and pilots emphasizing market research and expansion, technology development and transfer, collaborative approaches to ecosystem management, and other strategic ventures that support regions.

In particular, federal and state agencies should partner with regional entrepreneurs to link urban consumers and rural producers through direct marketing channels for locally grown food. Such links would offer opportunities to protect farmland located in or near metropolitan areas while maintaining economically viable small farm production. These direct marketing opportunities can be promot-



Once dilapidated, "Warehouse Row" in Chattanooga, Tennessee, now houses a designer outlet that draws shoppers from across the region.

Photo: Center of Excellence for Sustainable Development.

ed and enhanced by a variety of federal and state programs and activities, including community food security programs, community-supported agriculture, development of value-added processing and marketing enterprises, cooperatives, procurement policies, school meal programs and other institutional food systems, and farmers' markets. Success stories, lessons learned, and elements of success should be identified and evaluated for future replication.

Action 2

Natural resource agencies, including the Forest Service, Bureau of Land Management, and Natural Resources Conservation Service, should work together to bolster natural resource-based opportunities as part of regional sustainable community development efforts. Greater federal interagency cooperation is needed to help communities understand and incorporate opportunities to conserve and protect natural resources and ecosystems which are often decoupled from community and economic development strategies. These efforts should encompass both rural and urban areas. Although natural resources and the land base are viewed as rural, many jobs and processes that use these resources as raw materials are located in urban areas.

Agencies should organize their collective enterprise development efforts; they should especially help expand the work of the Joint Center for Sustainable Communities

with cities and counties nationwide on natural resource-based enterprise development. This work can help strengthen the linkages between rural and urban America and reinforce the connections between the environment and economic development.

Action 3

USDA should take the lead in supporting efforts to protect farm, ranch, and forest lands through regional alliance. An alliance of organizations and agencies concerned with protecting historically rural lands threatened by conversion to other uses is forming around ecological and productivity concerns. Agencies could support research and analyses to more holistically characterize the issue from the perspectives of protecting farm, ranch, and forest lands. Agencies and other organizations could identify needed policy and program responses including expanded incentives to conserve "working lands" in urbanizing areas as well as at the edges of metropolitan areas. In particular, agencies and other organizations should evaluate the effectiveness of "Forest Banks"³⁷ and their adaptation to promote better management of other ecosystems and other natural resources.

In addition, federal agencies will help sponsor and organize a national conference on Working Lands and Development in June 1999 as a follow-up to the National Town Meeting for a Sustainable America. This conference will aim to provide participants with a better understanding of problems, considerations, and opportunities from the perspectives of professionals and public officials involved in land use issues or related transportation, rural development, or urban development issues that influence land use. The federal government can help regions build more livable communities through the productive use of existing infrastructure and the conservation of critical natural resources on farm, ranch, and forest lands.

Recommendation 7

Federal, state, and local government, working with public and private financial intermediaries, should increase access to capital for sustainable community initiatives.

Action 1

Using the power of the National Performance Review Act, the Administration should continue to consolidate and coordinate federal programs and allow flexibility to enable states and local governments to consolidate small-

SUSTAINABLE APPROACHES TO WORKFORCE DEVELOPMENT

Systems

- Training systems should link to current employment systems, anticipate and plan for future jobs, and integrate and leverage current training resources across government, the private sector, and nongovernmental organizations (e.g., school-to-work, welfare-to-work).
- Employment systems should link to current training systems to inform, steer, bolster, and nurture their efforts.
- All economic development efforts should have explicit links to job training and continuous learning programs to ensure that all sectors of society benefit from development.
- Local development that benefits from public investments should be required to train and hire locally.
- Local programs should maximize the value of federal and state workforce development funding through such methods as one-stop career centers and school-to-work programs.

People

- Workforce development efforts should recognize personal potential and dignity.
- Those in need should be afforded the opportunity to receive training or other employment support.
- Job training should focus on those fields and skills for which reasonable employment opportunities exist.
- People should be informed about what worker training is available and what a career in that field may be like.
- Support systems — e.g., life skills training, transportation, daycare, substance abuse counseling — are crucial to the success of individuals endeavoring to break the poverty cycle.
- People should be provided with role models and mentors, and case management care from providers.

Commitment

- Communities should know what workforce development opportunities may (or may not) be available to them, and should be part of the decision-making process to determine whether particular types of jobs and industries fit their identity and goals.
- Local champions are crucial in initiating and maintaining local workforce development. All other aspects of workforce development must come together at the local level via partnerships and alliances that put aside turf and politics for the greater good.
- Local industry, business, government, and nongovernmental organizations should be united and committed to making workforce development support local people.

er separate grant programs. Many sustainable community initiatives are spearheaded by community groups that lack the experience, fiscal resources, and time to work within the complex administrative structure of government. Other organizations have expertise, time, and money, but could be even more productive if their resources were targeted elsewhere. Although federal, state, and local governments have taken action to reduce obstacles, continuous attention should be given to encouraging flexibility for funding eligibility and “one-stop shopping” for grants and other funding opportunities.

Action 2

The Administration should create a commission compris-

ing banks, governments, and community development corporations to evaluate how recent restructurings of financial institutions can provide opportunities for sustainable community development. Corporate and legal restructurings incur a variety of public obligations. Each new merger in the banking and financial services industry, particularly on the scale evidenced in the past two years (such as the recent Citicorp-Travelers Insurance merger to create a \$700 billion institution), creates new kinds of reinvestment obligations under the Community Reinvestment Act (CRA). As regulatory practices move from command-and-control to more flexible performance-based systems, increased public disclosure requirements increase the opportunities for public intervention and negotiation to guarantee that CRA obligations will

The search is on to discover a new civic DNA, the biochemistry of leadership that fits the demands and opportunities of the 21st century. Regional and local leadership — shared across the civic, business, and government sectors by people willing to cross the old and familiar boundaries — is more critical than ever.

— Neal Peirce and Curtis Johnson, *Boundary Crossers: Community Leadership for a Global Age* (New York, NY: The Academy of Leadership Press, 1997).

produce tangible community and consumer benefits.

The proposed commission may also evaluate if it is necessary to increase CRA obligations, applying these obligations to all financial institutions, and expanding the federal pool of funds (currently about \$350 million) for seeding new community development financial institutions. Despite the incentives provided by CRA, poor communities still lack banks or other institutions in which to place their savings, and the poor, in general, remain unable to access affordable credit. This significantly affects progress towards sustainability in inner city and rural communities.

Action 3

Working with financial institutions and rural community development corporations, USDA should develop strategies that address rural credit concerns. The range of financial institutions involved in rural communities is often small. Some sectors of rural America are well served, such as large farms and housing. Less well served are sustainable agriculture; small farmers, ranchers, and woodlot owners; small municipalities interested in rural development projects; and entrepreneurs interested in new innovative businesses (such as information and knowledge-based industries and services); these are precisely the types of entities that could serve as the foundation of rural sustainable communities.

Action 4

The Administration should strengthen and support community-owned banks. In pursuit of this goal, it should support full funding of the U.S. Treasury's Community

Development Financial Institutions program. Local ownership is an important way for a community to inoculate its banks against unwanted shutdowns, mergers, or departures and ensure a high level of community reinvestment of savings. The argument for local ownership applies with even greater force to nondepository financial institutions which have no CRA obligations for community reinvestment. Leaders from all sectors, the Administration, community development corporations, and foundations should highlight the efforts of various kinds of local depository institutions — commercial banks like South Shore, thrifts like the Union Savings Bank of Albuquerque, and community development credit unions like Raleigh-Durham Self-Help — that are helping low-income members and small businesses finance myriad sustainability initiatives.

Action 5

The appropriate federal agencies, in collaboration with the private sector, should actively promote initiatives aimed at creating a secondary market for financing sustainable community development. HUD, for example, has launched a pilot for creating such a secondary market and has developed a budget proposal to take the concept to a larger scale. The Minneapolis, Minnesota, nonprofit Community Reinvestment Fund, which serves 15 states, operates a secondary market for development loans. The Fund purchases loans, at market values, from the revolving loan funds of local nonprofits and municipal economic development and affordable housing programs. The Fund then sells bonds, backed by pools of these development loans, to investors. This secondary market enables local organizations to raise cash to fund projects,



“Bridges to Friendship Clean Up Day” sponsored by the Washington Navy Yard and local District of Columbia grass roots organizations.

Photo: Global Environment and Technology Foundation.

and it helps them become less reliant on foundations and government to fund their ongoing development lending programs.³⁸

Action 6

Federal, state, and local governments should strengthen relationships with the philanthropic sector to leverage their respective funds as a source of capital for sustainable community development. There are more than 400 U.S. foundations with combined total assets of \$10 billion. These foundations play a critical role in supporting development for the general community well-being. The public sector should work with foundations on place-based community development initiatives to better leverage public and private funds.

Recommendation 8

Promote shift in tax policies and subsidy reform.

Action 1

The Administration should assess the impacts of the Taxpayer Relief Act of 1997 on land use and development patterns and community reinvestment. There are two facets to this assessment. First, this tax law virtually repeals the capital gains tax on the sale of personal homes. The Environmental Law Institute estimates that the law could affect nearly \$4 million in sales of existing homes each year.³⁹ At the same time, the 1997 act creates new opportunities for urban revitalization by making housing rehabilitation by owner-occupants an opportunity to generate tax-free income. It is unclear, however, whether this rehabilitation will occur in urban areas in need of revitalization.

Second, the law includes the first new tax incentive for land conservation in over a decade which makes certain

CREATING EFFECTIVE MULTISTAKEHOLDER PARTNERSHIPS

The Bay Area Alliance for Sustainable Development (BAASD) includes representatives from businesses; foundations; the religious community; the environmental sector; social equity organizations involved in such areas as housing, homelessness, and multiculturalism; regional, state, and federal agencies; and local officials from a nine-county area of the San Francisco-Oakland metropolitan area. BAASD compiled lessons learned about its regional and multijurisdictional process to determine how similar partnerships can be more effective:

- The process should help advance a recognized need already within the interests and/or workplans of stakeholder groups. Critical, controversial issues, such as the environment, may not get the attention they need through a consensus process because of the difficulty in finding common ground and agreement on solutions to specific problems. Also, too broad an agenda may discourage participation by groups focused on single issues.
- The process needs to be fair and to involve all stakeholders. Many stakeholders cannot afford to be involved because collaborative processes are time-consuming; thus the more well-funded constituencies (usually the business sector) may control the agenda.
- The process needs to identify key leadership, workplans, timelines, and funding support; there should be agreed-upon procedures for raising and resolving issues.
- The process should move beyond just instilling good feelings and enthusiasm in participants to actually producing solutions.
- The people representing key constituencies and/or organizations must have parity in terms of their experience, expertise, and negotiating skills. These stakeholders must represent their respective organizations and/or constituencies well.
- An adequate and publicly available database/inventory of stakeholders' ongoing sustainable development projects and best practices can enhance the work of stakeholder groups by providing a ready source of information about the kinds of innovative efforts that are underway.
- Participants must be available for what can be a time-consuming, long-term process. If the more distant stakeholders cannot participate due to time and travel constraints, their interests may not be fully represented.
- Sometimes, agency fears of being undermined, or a lack of trust regarding other agencies, may make it difficult to reach goals. A multistakeholder process can help build trust and find common interests among these participants.
- A public education program can enhance success.

land in or near a metropolitan area, national park, wilderness area, or urban national forest eligible for favorable estate tax treatment through the donation of a qualified perpetual conservation easement. USDA, working with the U.S. Department of the Treasury and other appropriate agencies, should identify how the conservation incentive provisions should work.

Recommendation 9

Promote holistic economic development planning.

Action 1

The Economic Development Administration should take the lead in developing and delivering educational forums for state, local, and tribal economic development planners on how economic planning and sustainability community goals can be aligned and on how to attract and promote sustainable business development. Already, Economic Development Administration (EDA) planning supports 320 economic development districts and 65 Indian tribes, staffed and operated locally, to help communities build capacity to focus on long-term economic challenges. Since economic development districts are often coordinating entities for various federal programs, the agency also supports and encourages interdisciplinary regional planning that encompasses economic, social, and environmental factors. Current EDA efforts should continue to meet the need for increased sustainable business development.

Action 2

Elected, community, and business leaders; labor representatives; and local government agencies should work together with residents to develop a consensus about what types of business investment would succeed in their community and which are desired, and communicate this consensus to brokers, trade associations, and potential investors. Community groups should also create, where possible, a partnership that can represent community interests to new and existing businesses considering an investment in the community. National community development organizations, industry associations, and economic development agencies should work together to identify and promote industry-specific strategies that increase community investment and promote sustainability. In particular, building on experience from the Empowerment Zones and Enterprise Communities, these groups should look at how to promote new economic opportunities for sustainable small businesses in low-income communities.

Recommendation 10

Promote business and industry investment and involvement in sustainable community development.

Action 1

The Administration, working with leaders from financial institutions, business, and community-based organizations, should convene a series of national forums to engage the financial community and private sector in sustainable community revitalization. These forums would identify opportunities for the private sector to engage and invest in sustainable community alternatives.⁴⁰ They would open a dialogue to obtain high-level commitments from private sector leaders to partner with government, non-governmental, and community development organizations on sustainable community initiatives and to help remove barriers and obstacles to sustainable community revitalization in metropolitan and rural areas.

Action 2

Key stakeholders should continue to modify existing programs and jointly develop and implement new policies to make infill properties desirable to investors and better able to compete with greenfields. Developing infill property is often more costly and complicated than developing greenfields. Federal and state policies have been enacted that

STRATEGIES CONCERNING PEOPLE AND LOCAL CAPACITY

Sustainable community development initiatives must serve and invest in people. Strategies can build local capacity in the following ways:

- Unleash the potential that resides within individuals — human capital — through education, occupation, health care, and other human services.
- Increase social capital — the relationships among people — so as to allow human capital to move towards its potential.
- Enable people to have sufficient ownership of resources to implement projects and programs. People will invest in their neighborhoods and work hard to make them better if they, and not exclusively government, can steward public funds.
- Incorporate leadership training in sustainable development strategies.
- Build informal networks that can link innovative entrepreneurs to mobilize resources and formulate alternative strategies to build local capacity.
- Work with people to help them use their skills, knowledge, and abilities, so they can utilize, rather than depend on, experts.
- Strengthen relationships and communication among people and institutions to improve community initiative, responsibility, and adaptability.

attempt to level the playing field between urban and exurban locations, but federal, state, and local governments should continue to review existing policies and develop new ones to provide the same level and quality of investment and services to the inner city and older suburbs as are provided to exurban locations. For example, the federal government should continue to review existing policies and develop new ones to fully implement brownfields legislation and its National Brownfields Partnership. States should investigate whether they can replicate the growth management initiatives of the city of Portland, Oregon, and the states of Maryland, Florida, and New Jersey.⁴¹ City governments should also work with business associations to reduce or eliminate regulations that impose costly and unreasonable barriers to business development in distressed communities.

Action 3

Federal, state, and local governments and community non-profits should develop networks to match green businesses with the needs of municipalities, communities, and each other. This initiative could be particularly relevant for facilitating outsourcing in ways that strengthen local economies and help fledgling green businesses find green suppliers and potential customers. For example, the Triangle J Council of

Governments Industrial Ecosystem Development Project — a partnership between EPA, the North Carolina Division of Pollution Prevention and Environmental Assistance, regional development agencies, and local universities — is surveying companies in the Raleigh-Durham region to identify ways to turn the waste of one company into a raw material for another company. The Interagency Working Group on Environmental Technology is developing a database with Public Technology, Inc., to match the specific needs of state and local municipalities to appropriate environmental technology providers. Citizens in Appalachia are electronically tying their communities into the new world economy through the Appalachian Community Economic Network. With the Network's help, more than 20 entrepreneurs have found customers through the Public WebMarket, a project tapping the resources of the World Wide Web and orchestrated by the Center for Civic Networking.

Action 4

Federal and state governments, community development corporations, and nonprofits should determine how existing programs for small businesses and microenterprises can be tailored for green and sustainable start-ups. Microbusinesses in the United States comprise an “invisible economy” that goes largely unnoticed in economic

COMMON ELEMENTS OF REGIONAL COLLABORATION

There is not one driver, champion, or model of regional collaboration. Attempts at collaboration face three significant types of obstacles. First, the rules and regulations at the state and federal levels place unrealistic and cumbersome requirements on collaboration. Second, collaborations have to overcome a long history of distrust and fragmentation among groups within regions. Third, both the structure of the political process and financial markets tend to foster short attention spans, whereas collaborations require a long-term focus. A survey of case studies reveals that collaborations are effective if they build relationships across diverse and disparate interests, including government agencies, foundations, public interest coalitions, business leaders, civic leaders, and elected officials. These initiatives also recognize the importance of building the process from within the community. Thus, they have the ability to develop community capacity and to create truly inclusive processes. Successful models of regional collaboration include the following:

- **Informal Structures.** Civic organizations, citizen assemblies, areawide task forces, and alternative planning organizations tend to be less threatening to citizens and elected representatives who wish to retain local control of decisions that affect their community.
- **Single Issues.** Most successful cases form around one issue, usually addressing business development, transportation access, land use, environmental quality, welfare reform, housing, and so forth. In many cases, single issue projects evolve into broader initiatives.
- **Communication Networks.** Strong civic organizations and other forms of cross-community organization often provide a preexisting infrastructure for a conversation about the need to collaborate and stay committed to collaboration.
- **Lending Leaders.** Sustained funding is essential to provide the opportunities for collaborations to emerge and take form. It takes time for communities to develop the internal capacity to trust, participate, and join partnerships.
- **Inclusive Processes.** As noted by a researcher in a paper prepared for the Center for Neighborhood Technology, “to change a system, you need the whole system in the room” (Julia Parzen, “Innovations in Metropolitan Cooperation,” Chicago: The Metropolitan Initiative, 1997). Of particular importance is including people who bring

development debates. Recent research, however, reveals that microbusinesses with four or fewer employees generated 43 percent of the net new jobs created from 1990 to 1994.⁴² Multiple stakeholders should promote new economic opportunities for small businesses in low-income communities and address the difficulty of financing small commercial loans in rich and poor communities alike.

Research to determine best practices, successful strategies, and the profitability of existing and potential sustainable investments in metropolitan and rural communities should be disseminated through trade associations, business groups, business schools, financing sectors, and the electronic and print media.

Recommendation 11

Promote sustainable strategies to workforce development.

Action 1

Federal, state, and local agencies; the private sector; and community organizations engaged in workforce development and welfare-to-work should integrate their programs

so that those most in need of help can access a seamless system of support services. The box on “Sustainable Approaches to Workforce Development” (following) lists ideas for thinking about the requisite systems, people, and commitments to accomplish this objective.

Action 2

The U.S. Department of Transportation, in cooperation with other federal agencies, should continue aggressive implementation of the Job Access and Reverse Commute Grant program to address gaps in the transportation system that hamper welfare recipients and other low-income people from getting to jobs and other support services. Transportation has been identified as a key element of job placement and retention. Those who seek work cannot work if they can't get to work.⁴³ At the local level, agencies, nonprofits, community organizations, and other public and private sector entities should coordinate efforts to ensure that employment transportation needs are identified, prioritized, and integrated with the existing transportation system. Employers should take a lead role in identifying and meeting the transportation needs of their

workforce, both by directly providing services and working with other employers and transportation providers to ensure effective and timely access.

Action 3

HUD should be able to provide funding to managers of affordable housing projects to enable them to implement and provide services to help residents of HUD-assisted housing developments find and retain jobs. These funds will enable HUD to complement the efforts of the U.S.

CHAPTER 5
INTERNATIONAL LEADERSHIP

Department of Labor and its Temporary Assistance to Needy Families program. The funds will also expand the agency's current efforts to link residents of poor neighborhoods with support services and jobs outside of their neighborhoods.

Action 4

Local elected, community, and business leaders; labor representatives; and local government agencies should establish strong linkages between economic planning/development activities and education and training systems. Business development and recruitment efforts frequently are not firmly linked with education and job training programs. All too often, this means that even though busi-

LOCAL CAPACITY AND PARTNERSHIPS: CREATING "CIVIC DNA"

Recognizing that the challenges facing communities extend beyond sectoral and jurisdictional boundaries, *Sustainable America* and the PCSD's subsequent report, *Building on Consensus*, advocated collaborative regional

As the world's largest economy and a nation that many look to for models and guidance, we have a responsibility to demonstrate that it is possible to have both a strong economy and a clean environment. However, we should not just view international leadership as an obligation. It is also in our own self-interest to maintain an international perspective in an increasingly globalized world.

nesses decide to locate in a particular community, the residents of that community who have the greatest need for jobs do not have the skills to acquire and/or retain jobs in these businesses. Firmer linkages will establish feedback mechanisms whereby education and training programs can better prepare participants for future jobs that are expected to be located in an area.

planning and cooperation.⁴⁴ This collaboration could address regional challenges that include preparing and linking people with high-quality jobs that are dispersed throughout a region and increasingly concentrated in suburbs; competing economically through the development of world-class communications, information, and transportation systems; providing an array of affordable housing opportunities throughout a region; creating and maintaining high-quality, equitable school systems; preserving quality of life by protecting the environment; controlling traffic congestion; and revitalizing central cities, rural towns, and older suburbs.⁴⁵

There is a serious gap between the complexity of these challenges and the types of leadership and capacity that are needed at the local and regional levels to resolve them. To advance sustainable community development, we need policies and leadership that build the capacity of individuals and institutions to recognize challenges, forge innovative solutions, and track performance. Success is contingent on investing in people, particularly by developing those essential champions who can mobilize local support for projects.

"Advise the President on the promotion of sustainable development internationally, and gather and disseminate information about U.S. and international sustainable development policies. Promote the creation and continuation of national sustainable development councils around the world.

"Additionally, given the increasing flow of financial capital from developed to developing countries, the Council shall recommend policies that encourage foreign investment by the U.S. Government, businesses, investors, and, as appropriate, multilateral institutions that are consistent with the principles of sustainable development."

— PCSD Charter, April 1997

KEY FINDINGS — INTERNATIONAL LEADERSHIP

- The United States must use its leadership role to help chart a path towards sustainable development both at home and abroad. In doing so, the United States should be open to learning from other nations' experiences; it should also foster sustainable development internationally in a spirit of partnership.
- Multilateral agreements should recognize and address economic, environmental, and equity considerations. Sustainable development is inherently an integrative effort. Economic agreements must consider environmental and social effects, and environmental agreements must address economic viability and social equity in order to be truly sustainable.
- New coalitions of interests are needed, both domestically and internationally, to build support for the changes necessary for sustainable development to be achieved. Without champions from all sectors, change will not occur.
- The Administration should support the continuation of a sustainable development council or another body as a forum for thoughtful consideration of sustainable development issues by high-level leaders in all sectors. By having such a body, the United States sends a strong signal to the world that multistakeholder dialogue and consensus-building are important forms of policy advice and development. Such a Council strengthens the commitment of all sectors to a more sustainable future.
- Foreign investment, assistance, and all government activities should be progressively and consistently conducted in ways that promote recipient countries' efforts to achieve sustainable development. This includes technical and financial assistance, bilateral assistance, and support of multilateral assistance. It also encompasses activities not usually thought of as "aid" but which can serve as a means for promoting sustainable development, such as Food and Agricultural Organization funds, export promotion, and the like.
- The forum that continues for consideration of sustainable development issues can benefit from information exchange with the international community. Efforts should be made to disseminate the Council's work internationally as well as to learn from other countries' experiments and experiences in working to achieve sustainable development.

We also need policies that try to build relationships among diverse individuals, institutions, and jurisdictions. The recommendations in this section address three areas of activity concerning local capacity and partnerships:

- Building a Multicultural Society. As we move forward into the 21st century, America will become more diverse, making it imperative that we rapidly dismantle the barriers that separate Americans from each other. According to the designations used by the U.S. Census, America is today 72.7 percent white, 12.1 percent black, 11.0 percent Hispanic, 3.6 percent Asian/Pacific Islander, and 0.7 percent American Indian. By 2050, the population in the United States will be approximately 53 percent white, 25 percent Hispanic, 14 percent black, 8 percent Asian/Pacific Islander, and 1 percent American Indian.⁴⁶ There is much work to be done in building a thriving multicultural society in America that is unified and not fragmented. Unless multiple stakeholders foster greater cultural tolerance and acceptance, current

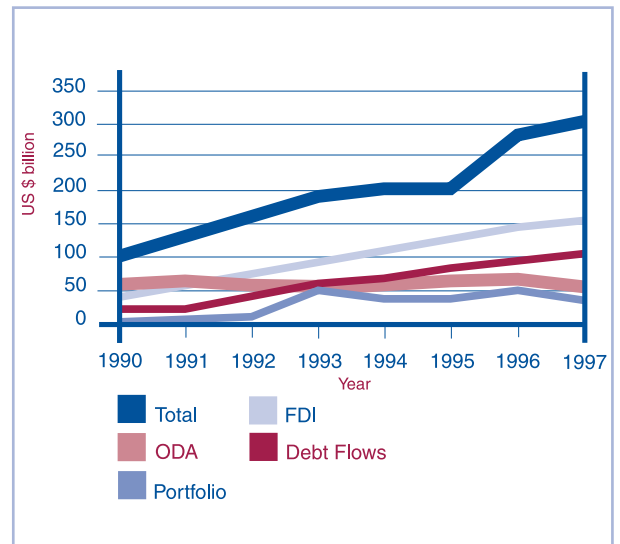


Figure 1. Net resources flows to developing countries, 1990-97
Source: World Bank.

trends may point to greater segregation in the future. In the last decade, for example, major metropolitan cities such as New York, Miami, and Los Angeles experienced significant outmigrations of middle-class whites as new immigrants arrived.⁴⁷ Sustainability initiatives will be challenged to address race and culture in ways that promote economic and social well-being for all residents. Partnerships cannot take unless individuals cross the boundaries that separate them and keep them from recognizing their common interests.

- **Building Local Capacity.** A community must be able to create its own vision of the future, develop and implement it in conjunction with the public and private sectors, and assess progress towards that vision. This capability is vested in an array of formal and informal networks of individuals and institutions. When a community is rich in this capability, there is a strong community spirit manifested in myriad ways: strong local philanthropy, volunteerism, worker commitment to business, and business support of community initiatives. As much of the social and cultural landscape in the United States undergoes profound change, communities are challenged to re-create the webs of local interaction that nurture local capacity and community spirit.
- **Building Regional and Multijurisdictional Partnerships.** Successful initiatives often recognize that a region is greater than the sum of its parts in order to create more realistic, holistic, and useful policies and plans. Regional collaboration can take multiple forms and occur at different points of entry in the same geographic area. Regardless of the form, regional collaboration must embrace community-based, intergovernmental, and market-informed processes. Community-based regionalism attempts to represent the concerns of all community interests fairly (nongovernmental organizations, private sector, and government) in finding mutual solutions to pressing community challenges. Intergovernmental regionalism attempts to coordinate public sector investment and resources efficiently and expediently to address challenges that cross jurisdictional boundaries. Market-informed regionalism attempts to ensure that public sector incentives can be used to leverage private sector resources and commitments. Community, government, and market actors should form a powerful consensus, building a culture of inclusive engagement to



Employees harvest and classify roses for export to the USA at San Sebastian Farm where owners have found roses to be a profitable nontraditional export commodity.

Photo: C. Watson, U.S. Agency for International Development.

support sustainable communities.

Recommendation 12

Develop initiatives to support and strengthen multicultural relationships in the context of sustainable development.

Action 1

Leaders from all sectors should work with the Administration to identify how national initiatives on sus-

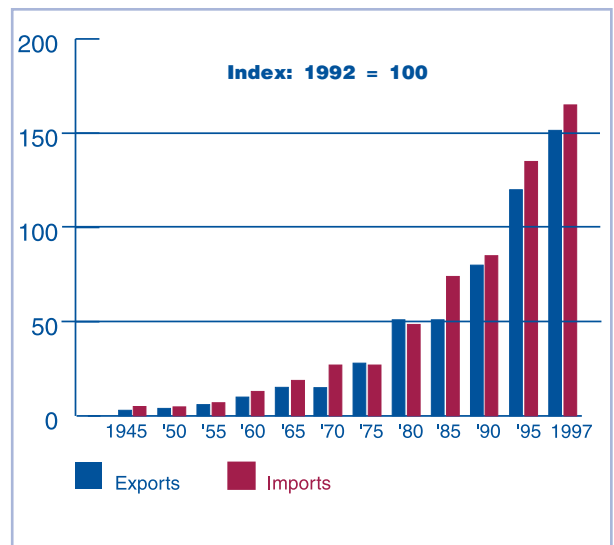


Figure 2. U.S. exports and imports indexed to 1992 levels.
Source: U.S. Department of Commerce, Bureau of Economic Analysis.



The U.S. Agency for International Development Commercial Agribusiness Promotion project helped the owner of this dairy farm in Finaransoa, Madagascar, obtain a \$6,000 bank loan to buy a truck and expand his business.

Photo: Millie Morton, U.S. Agency for International Development.

tainable development can complement national and regional initiatives on building multicultural relationships. The Administration should, for example, continue to promote dialogue on cultural ethics and values through initiatives such as One America. The One America initiative has identified promising practices for racial reconciliation across the country in several areas: the arts, business, community and economic development, community building, education, government, health, religion, and youth.⁴⁸ Leaders from all sectors and the Administration should determine which of these practices also address economic prosperity, ecological, and social equity objectives so that best practices for building multicultural relationships in the context of building sustainable communities can be identified.

Based on this review, the Administration, working in partnership with federal agencies; businesses; state, local and tribal governments; and community-based organizations should convene a series of regional meetings addressing how sustainable community initiatives can leverage community racial, cultural, and religious diversity as important assets. The workshops should specifically address collaborative, inclusive participation of diverse racial, cultural, and religious groups and communities in regional initiatives.

Action 2

Foundations, the private sector, and community-based groups — working with federal, state, local, and tribal offices addressing environmental justice, community revi-

talization, and health and human services — should develop a series of workshops on how sustainability initiatives can provide opportunities for poor and minority individuals, persons with disabilities, and communities. Discussions on race, class, and the environment have traditionally focused on redressing inequities in disparate impacts of environmental problems on low-income or minority groups. Sustainable development can both deepen and broaden the context of environmental equity by identifying how low-income or minority groups can build on their economic, ecological, and social assets to strengthen and revitalize communities.

A series of workshops should be convened that identify investment opportunities in sustainable community development that can directly benefit minority and low-income communities. The workshops should address how policies and procedures can better recognize and build on indigenous knowledge; they should also provide best practices as well as investment and policy guidance for public and private sector agencies. Special attention should be dedicated to involving poor and low-income people in the design and implementation of these workshops.

Recommendation 13

Build local capacity for sustainable community development.

Action 1

Federal agencies, local government, the private sector, community groups, and foundations should develop and support a series of working sessions to build local capacity for sustainable community development. These working sessions would bring together community leaders and key agencies to build local capacity for decisionmaking and collaboration by (1) ensuring access to good information, (2) providing a range of technical assistance, (3) helping communities acquire analytical tools, and (4) training local individuals and organizations on best practices. Such working sessions could also provide a mechanism for regional collaboration. As originally proposed by the National Academy of Public Administration, such workshops could “lay the foundations for a permanent forum between regions and the many different federal agencies that have an interest in regional problem-solving.”⁴⁹ Working sessions could be tied to existing outreach programs at universities or newly created, like HUD’s Community Builders Fellows program; these could be sponsored by regional, statewide, or community foundations.



Zivnice, Bosnia, Women's Association distributing the Dayton Agreement. The U.S. government supports independent media and politically active civil society organizations by providing direct grants of assistance.

Photo: Nick Cox, U.S. Agency for International Development.

coordinate its vast array of information, technical assistance, and funding to meet local and regional goals.

Action 2

The Interagency Working Group on Sustainable Development Indicators, working with human service providers and community-based indicator projects, should develop indicators that can better measure social capital and local capacity. There are several measures of social capital. One is the type and frequency of interactions within and outside the community. Examples are inventories of civic associations that provide information on members including numbers and characteristics such as age, gender, race, and disabilities. Such inventories can show frequency of meetings, decision-making processes, finances, and services provided to members and nonmembers. Another measurement is the impact of various types of social capital on the ability to reach sustainable development goals. This effort should, at a minimum, examine each of these measures of social capital.

Recommendation 14

Encourage regional and multijurisdictional partnerships.

Action 1

The federal government should provide incentives for collaboration and use more flexible and regional approaches to align its information and its investments. These incentives could include financing for metropolitan collaborative pilot projects, as well as promoting innovative strategies for regional land use planning. The federal government should work with localities to determine how best to

Action 2

HUD, in conjunction with other federal agencies, should be given the authority and resources to provide new flexible funding to multijurisdictional, multisectoral partnerships to use in designing and implementing regional approaches to community, economic, and affordable housing development. Funding would be provided to cooperative partnerships of government, business, community, and institutional representatives from multiple jurisdictions within a region that can and have agreed to take quick action in adopting regional approaches. The funding should (1) overcome the hesitancy of localities to sacrifice their limited, piecemeal resources to interjurisdictional work; (2) enable cities and counties to respond to their sustainable development needs in the manner they see best; (3) enable regional partnerships to secure the capacity — with staff, technology, technical assistance, and more — needed to accelerate concrete collaborations; (4) partially cover the costs of implementing regional initiatives; and (5) create lessons that can be shared with other regions facing similar challenges, such as in providing affordable housing. This initiative would make a solid statement to the nation that the federal government views bottom-up, cooperative, interjurisdictional, and intersectoral partnerships as a critical tool for addressing existing development and embracing the sustainable development opportunities of the next millennium.

Action 3

States, regional councils, and local governments should incorporate sustainability mission and goals into regional planning guidelines, such as on smart growth and ecosystem management. Local governments, individually and regionally, operate within the legislative and administrative frameworks set by their state governments. State governments can help shape the course of their regions by embracing sustainability approaches and ways of thinking.

Action 4

State, local government, and regional organizations should support the use of indicators to show interdependence of jurisdictions within regions. The National Association of Regional Councils, for example, is currently developing a State of the Regions Report to help benchmark the performance of regions on a number of economic, environmental, and social factors. In metropolitan areas such as Baltimore, Cleveland, Portland, Seattle, and Chattanooga, local civic, business, and community groups have com-

pleted indicators that show the interrelationships of regional concerns and the effectiveness of regional cooperation.

CONCLUSION

Sustainable development requires coordination and partnerships to harness the disparate energies of numerous actors into a focused and cohesive movement. Key to rapid implementation of sustainable community development will be to make the most out of existing authority and resources. We believe that our recommendations can begin to bear fruit within the next three years.

- **By Year 1: Learning Through Information and Networks.** In one year, multiple stakeholders can enhance existing capacity by deploying new information toolkits and creating learning networks to facilitate swift cross-regional innovation and partnerships. We can also begin to make a persuasive and credible case for action to the public and key decisionmakers through education and communication.
- **By Year 2: Leveraging Markets and Financial Intermediaries.** By Year 2, stakeholders can be ready to leverage financial and technical intermediaries to create the crucial financial support needed by communities seeking to create sustainable projects. We can also create the economic incentives needed to encourage everybody to act in ways that enhance sustainability.
- **By Year 3: Linking Institutions to Build Local Capacity and Partnerships.** By Year 3, stakeholders can build strong regional and multijurisdictional partnerships and the local capacity needed to institutionalize sustainable community development.

Ultimately, the transition to sustainability will come down to actions taken at the community level all across the nation. It will require the integration of many innovations that concern people, ecology, buildings, utilities, electronic media, open space, natural resources, and economic and social arrangements. The authority and resources that exist at the community level today will be needed to achieve as many of these goals as possible. However, we will also need to put in place even stronger systems to enable continuous learning and continuous resource sharing.

By learning, leveraging, and linking, various stakeholders can work together to create the synergy needed to replicate successes and help move sustainable community devel-

FORUM ON THE MULTILATERAL AGREEMENT ON INVESTMENT

The following highlights some of the key issues regarding the MAI raised during the February 10 forum. These points do not reflect a consensus among forum participants; rather, they are included to provide a sense of the major concerns and potential benefits posed by the MAI.

- International capital flows contribute greatly to the growth of the United States as well as to the global economy. Investment and sustainable development need not be in conflict.
- Appropriate provisions must be made in the agreement to protect all nations' ability to enact and enforce their own environmental protection measures.
- Environmental and economic global institutions should be on an equal footing.
- From the NGO perspective, the MAI has the potential to link environmental and economic goals; however, this linkage must be strengthened in the existing text of the agreement.
- From the international business perspective, the MAI does not prevent sustainable development; given the appropriate conditions of national treatment, efficient operation, legal assurances, and dispute settlement, the agreement could enhance prospects for sustainable development.
- The MAI should set forth a framework for investors that includes standards for environmental protection, access to information, and access to justice.
- International investments will continue, regardless of MAI structure or codification. The agreement reflects the increased globalization of the world's economy and communication capabilities, as well as the desire to attain equi-

opment initiatives from inspiration to implementation. And, by forging vital partnerships that transcend arbitrary political jurisdictions and sectoral divides, these stakeholders can empower communities to leverage their ecological, economic, and social assets to secure a high quality of life both for today's population and for future generations.

INTRODUCTION

The United States is blessed with significant endowments of capital — natural, human, social, and financial. These riches enable the country to be a global leader, exerting substantial economic, political, and cultural influence around the world. With one of the highest living standards on Earth, the United States is the largest producer and consumer in all history, accounting for nearly 25 percent of the world's resources.¹ It is thus incumbent upon the nation to show stewardship as well as leadership and to put itself, and to help set the world, on a path towards sustainable development.

The United States' international leadership is wide ranging, and both formal and informal in nature. Formally, for example, the United States is an important member of the United Nations, serving as one of the five permanent members of the Security Council. Other nations often

hesitate to act to address international issues of security, development, or the environment unless the United States takes the lead. Informally, America's popular culture exports have for decades shown people around the globe a high standard of living (although not necessarily a better quality of life), with an accompanying high use of resources. While this "American Dream" has been an inspiration for much of this century to people around the world who hope for a better future for themselves and their families, it is critical that, as we move into the 21st century, the images we project of an American dream are indeed sustainable.

As the world's largest economy and a nation that many look to for models and guidance, we have a responsibility to demonstrate that it is possible to have both a strong economy and a clean environment.² However, we should not just view international leadership as an obligation. It is also in our own self-interest to maintain an international perspective in an increasingly globalized world. With the recent growth in communications — where news is provided worldwide around the clock, and where the Internet disseminates masses of information continuously and instantaneously around the globe — problems and situations that previously were only local or national in scope now take place on an international stage. This can be a double-edged

sword: while we are exposed to international events and are able to acquire more information, the information can be overwhelming and outpace our ability to respond.

Despite the stature of the American economy, our way of life is not self-sufficient. American imports and exports have grown dramatically in the latter half of this century. We depend on other countries for goods that we do not produce ourselves as well as for inputs to production. Exports have contributed to 30 percent of U.S. economic growth, supporting about 12 million high-paying American jobs.³ The flow of money, as well as of goods, has also increased. Although the United States is not highly integrated into the global economy due to its large domestic economy, in 1996 gross private capital flows (inflows and outflows) amounted to 12.5 percent of the U.S. gross domestic product (GDP), up from 8 percent 10 years earlier.⁴ In 1996, the United States spent about \$56 billion in developing countries — \$11 billion, or 0.02 percent of GDP, in official development assistance (ODA); and \$45 billion in private outflows.

Worldwide, at the beginning of the decade, private capital flows to developing countries were approximately commensurate with official development assistance (\$42 billion and \$56 billion, respectively). According to 1997 estimates, however, private capital flows were six times greater than ODA that year, reaching \$256 billion⁵ (see figure 1). The dramatic growth in international private capital flows to developing countries in the 1990s was the result of changes in both the developing and industrial worlds. Developing countries began welcoming foreign capital through regulatory and policy changes and opened the sale of many state-owned companies to private bidders. On the part of industrial countries, computerized financial networks facilitated global investments, while economic growth and low interest rates encouraged a search for higher returns in emerging markets.⁶

Given the enormous increase in international private capital flows, consequent economic growth, and uncertain net environmental and social consequences, the President's on Sustainable Development (PCSD) examined the impacts of these capital flows on sustainable development, particularly in developing countries. To broaden our understanding of these complex issues, the Council convened high-level forums relating to two timely and critical mechanisms that would, if instituted, influence foreign investment: the then-prospective Multilateral Agreement on Investment (MAI) and the Clean Development Mechanism (CDM). Both

forums were well attended and drew a diverse range of participants, bringing new clarity to these issues. The Council also provided input to the United Nations' reexamination of development finance,⁷ emphasizing sustainability and the

Sustainable development is inherently an integrative effort. For nations to achieve sustainable development, multilateral agreements or processes that affect the economy, the environment, or social equity should be undertaken from a perspective of sustainability and reflect all three areas of concern.

recognition of social and environmental concerns as vital components of economic growth.

INTERNATIONAL CONNECTIONS OF PCSD ACTIVITIES

As globalization has brought many issues from the domestic realm to the international and back, every one of the Council's topics of attention have international connections. The term "globalization" often refers to the trend towards decreased importance of national borders in the face of increased contacts among people, companies, and institutions, and rapid advances in technology. For instance, environmental and social justice organizations around the world have used technology to unite in advocacy of various issues, in effect increasing the transparency of governmental and business activities. International transactions by American businesses continue to grow. Figure 2 shows the dramatic rise in both exports and imports throughout the latter part of this century. American and international business have become increasingly interconnected through plants, jobs, and capital. In recent developments, for example, information technology has made it possible to employ subcontractors through the Internet, creating co-workers on projects without their ever meeting face to face. These trends have meant a de facto increase in the relative degree of influence over international relations by entities outside

government.

The majority of cross-border investments to developing countries takes the form of foreign direct investment (FDI), such as joint ventures or building facilities in other countries. (See figure 1.) These investments have a longer time horizon than portfolio investment or debt financing, and are most directly affected by environmental considerations. FDI has the demonstrated potential to promote basic social and environmental goals: such as increased awareness of environmental factors, increased efficiency of resource use, worker skill development, and new resources to address existing environmental problems.⁸ One way to use these investments to help facilitate countries' sustainable development efforts is to work with companies and their international operations. For instance, the Council's Environmental Management Task Force has proposed next steps in building a new environmental management framework for the next century that would help move the system towards sustainable development (see chapter 3). While these recommendations are tailored to the American system of environmental management, much can be gained by sharing this new vision of relationships internationally among businesses, governmental regulatory structures, and people. And for our part, the United States is also learning from international efforts, such as the International Organization for Standards' ISO 14000 and the European Union's Eco Management and Audit Scheme.

American leadership and international engagement are especially important in addressing the array of global issues that can only be solved through cooperation. Solutions to global environmental problems such as the destruction of the ozone layer, the loss of biological diversity, and human interference with the climate depend on the participation and leadership of the United States. The country is currently engaged in a significant global

effort to assess and monitor trends in the state of the world's forests and to promote sustainable forest management. Since the United States is the world's largest emitter of greenhouse gases, American leadership on slowing climate change is vital. The Council's Climate Change Task Force highlighted the importance of early action to protect the climate. The Council's work on this issue (see chapter 2) has stressed the importance of improved technologies and their dissemination both domestically and globally, as well as the broader benefits that can be realized when communities take action motivated by other objectives. Technologies and other technical assistance from industrialized countries can help developing countries grow their economies while improving environmental protection and opportunities for all. The Clean Development Mechanism in the Kyoto Protocol is one means of institutionalizing cooperative approaches for achieving sustainable development while reducing greenhouse gas emissions. Under the CDM, investments can be made in cleaner sources of energy or cleaner industrial processes in developing countries in exchange for credit against greenhouse gas reduction targets.

Economic development, deterioration of cities, a variety of transportation issues, and the inability to deal effectively with rising populations in metropolitan areas are issues that communities face around the world. The Council's Metropolitan and Rural Strategies Task Force has developed tools to assist communities to develop more sustainably; to find ways to invest in people, places, and markets; and to assess and track progress at the community level (see chapter 4). These tools may also be helpful for communities around the world. In the same way, American communities seeking ways to develop brownfields have learned from European communities' successful brownfields redevelopment and eco-industrial park projects. Sister city, county, and state affiliations between the United States and other nations began shortly after World War II. They developed into a national initiative when President Dwight D. Eisenhower proposed the people-to-people program at a White House conference in 1956.⁹ His intention was to involve people and organized groups at all levels of society in personal citizen diplomacy. These existing relationships provide a venue for increased learning as cities exchange strategies for meeting common challenges. For almost 40 years, the Peace Corps has served as an example of a successful approach for providing hands-on assistance directly to communities in need around the world. One Peace Corps volunteer in

“Our company makes a significant impact on the planet’s commerce and energy...our goal is to be a zero waste company. We define waste as any cost that does not produce value to our customers...Since 1994, cumulatively we’ve taken \$40 million out of our costs on our way to a projected savings of \$76 million by the end of 1998.”

— *Interface Sustainability Report, 1997*

“Our business policies express what we believe is right and wrong in business. They describe what BP expects of its people and what society can expect of BP. We believe that wherever we operate, our activities should generate economic benefits and opportunities and our conduct should be a source of positive influence; that our relationships should be honest and open; that we should be held accountable for our actions.”

— *British Petroleum Annual Report, 1997*

Poland is working with a Polish nongovernmental organization (NGO) to propose that the Polish government adopt a multistakeholder national council on sustainable development.

The President’s Council on Sustainable Development along with the Global Environment and Technology Foundation are convening a National Town Meeting for a Sustainable America to showcase examples of sustainable development at all levels across the country. This is an opportunity for others around the world to learn what we are doing, as well as for Americans to learn from other countries’ successes. The meeting’s theme of crossing boundaries demonstrates that it is necessary to learn from each other, not just person to person but also community to community, and nation to nation. We are enriched through discovering others’ successful approaches to implementing sustainable development.

In sum, we can better overcome the challenges of moving towards a more sustainable society when we learn how others have successfully faced similar issues. We have much to gain by sharing our experiences in advancing sustainable development in America; we have just as much to gain in learning from the experience of other nations in their efforts to achieve sustainable development.

THE IMPORTANCE OF COLLABORATIVE APPROACHES

Although at times challenging, the Council has learned that multistakeholder dialogue provides important input for efforts to achieve sustainable development. New coalitions of interests are needed to build support for change as we move from traditional models of economic development and environmental protection to integrated, sustainable systems. Many controversial issues are tackled without sufficient understanding of potential areas for common ground. Thoughtful dialogue among representatives from traditionally adversarial stakeholder groups can help promote mutual understanding, allowing a better appreciation of each other’s priorities and concerns, and building a foundation for collaborative problem solving.

The Council adopted this approach of assembling different viewpoints in two activities it conducted to help inform its consideration of international private capital flows and sustainable development. Although the two forums were designed for different purposes, they each included participants with a variety of perspectives on the topics discussed. In both cases, this format served to illuminate a broader array of concerns by all in attendance and fostered a greater understanding of the different priorities held by the various participants.

In addition to providing a place for various sectors to come together and discuss policy options, the President’s Council on Sustainable Development serves as a symbol of the importance and utility of a multistakeholder advisory body in building and maintaining a democratic tradition of governance. National governments should continue to have a focal point for sustainable development which provides opportunities for thoughtful discussion

The Clean Development Mechanism is intended to encourage investments in projects that help put developing nations on a more sustainable path and, in turn, help investor countries earn credits for subsequent greenhouse gas emissions reductions.

CDM FORUM RESULTS

Suggestions for a More Effective CDM

- Encourage flexible mechanisms that allow the benefits of cost-effective decisionmaking to be realized.
- Create profiles of “clear winner” model projects as prototypes for each sector - industry, energy, buildings and transportation. These examples can help decrease transaction costs and risk for other firms applying these models.
- Improve competitiveness of CDM projects using traditional investment criteria (i.e., decrease costs and risks, improve return).
- Examine both existing and new capital flows. Look at mainstream or incremental investments and assess possible incentives for meeting CDM criteria.
- Reduce risk to early participants. Governments and other public institutions should initially serve as “market makers,” with a graduate transition over time to a private sector mechanism.
- Address methodological concerns over certification and the establishment of baselines.

Suggestions for a More Sustainable CDM

- Encourage projects on poverty eradication and industrial development through the incentives in the CDM.
- Address the specific equity concerns of small island states and low-lying coastal communities.
- Examine the existing incentives in financing domestic infrastructure and energy projects for their effects on the CDM and carbon emissions.
- Use discounting or a full-cost analysis to differentiate between the net benefits of various energy sources; this would facilitate more meaningful comparisons between renewable and nonrenewable energy sources.
- Allow for weighting the value of credits based on the degree of environmental and sustainable development benefits. This would offer greater incentives for projects with secondary environmental and social benefits.

and a collaborative approach to policy development. In recent years, several countries have expressed interest in forming their own multistakeholder advisory body on sustainable development similar to this Council and have contacted PCSD for advice and information on its work. Sharing information with other national councils on sustainable development and attempting to learn from the experience of others should continue to be a staple activity of the Council.

The Council intends to invite representatives of other national councils from all corners of the globe to come to the National Town Meeting in May of this year and to bring with them their best examples and experiences in promoting sustainable development, as the United States shares its experience with them. There will also be an opportunity to compare experiences about what has been effective — and what has been most challenging — in creating and continuing national councils, as well as in implementing sustainable development.

SUSTAINABILITY IN INTERNATIONAL PRIVATE CAPITAL FLOWS



Al-Kaabneh, Palestine, is a small community which has no conventional electricity. The Greenstar Foundation and local villagers, with the assistance of the U.S. Department of Energy, installed a solar array at the local school where it powers, among other things, a multimedia computer system. A planned high-speed wireless Internet connection will allow video conferences and electronic commerce to be introduced to the settlement.

Photo: Michael North, Greenstar Foundation.

A LOOK AT THE PROPOSED MULTILATERAL AGREEMENT ON INVESTMENT

Private investment now dwarfs official development assistance in funds flowing into developing countries. As such, private investment, including foreign direct investment, has become the major engine of economic growth in these countries. (See figure 1.)

Growth, if not occurring within a framework of sustainability, can become a net negative force in a society. Conversely, growth that is aimed at social, environmental, and economic sustainability will have a positive long-term influence on the lives of people in the society. For example, as nations consider the issues surrounding multilateral agreements on investment, it is important that any such rules for private investment flows be compatible with sustainable development.

In December 1998, the Organisation for Economic Cooperation and Development (OECD) announced that negotiations on the MAI were no longer taking place, citing a number of important issues requiring further analysis and deliberation.¹⁰ The OECD officials agreed that further work should be carried out in a transparent manner and should involve all interested countries. While the MAI is no longer being negotiated, it is likely that bilateral and multilateral investment agreements will continue to be negotiated in the future, and analytical and conceptual work done in the context of MAI discussions should inform future work in these areas. In particular, the parties to the Free Trade Agreement of the Americas are negotiating an investment chapter to an overall trade agreement — thus these concepts are still quite relevant. Undoubtedly, the issues that remain will be difficult to resolve in the short term. Environmental and social criteria in investment decisions is increasingly being incorporated by financial professionals. It will be a continuing challenge to bring their consideration into investment negotiation discussions.

With this challenge in mind, the Council convened a Forum on the MAI and Sustainable Development in February 1998. The MAI sought, among other things, to protect international investors by ensuring that their investments abroad would be treated no differently than investments made by nationals of the recipient country. By affording such protections, costs and risks are reduced



Kia village, Arnavon Islands, Solomon Islands, is the site of a community-managed marine conservation area funded by the U.S. Agency for International Development.

Photo: Hank Cauley.

for investment, thereby creating a policy climate conducive to increased investment. Such investment has the potential to increase standards of living and distribute prosperity more widely. However, some groups are concerned that national sovereignty and the ability of smaller units of government to act would be threatened by such an agreement, and that broader effects on the environment, labor, and social justice could result.

The forum highlighted some of the key issues posed by the MAI. The Council decided not to take a position on the MAI itself, but to increase understanding of the various concerns and benefits of such an agreement among the interested parties. (A summary of the forum's proceedings can be found in appendix D.)

Several questions were raised that indicate the need for further analysis and consideration of the merits of concluding a multilateral agreement on investment. These queries stressed the need for better information about foreign investment, particularly its effects on developing nations' economies, environment, and quality of life. This speaks to the issue of whether transparency — generally agreed upon as desirable and necessary — is sufficient to provoke good environmental and social performance. Given the dramatic rise in foreign private investment and periodic financial crises in developing economies,¹¹ there

have been a number of efforts to analyze the relationship between private capital flows and the impacts on environment and society.¹² Research of this nature is vital to our attempts to understand the effects of globalization and should continue to be pursued.

MAI advocates asserted that the motivation for concluding a multilateral agreement on investment is, among other benefits to grow markets abroad. A climate for growth is encouraged when international agents ensure sufficient rules on property rights, investment protection,

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and dispute settlement mechanisms to guide this growth.

The purpose of the MAI was to promote foreign investment by reducing risks and distortions. One such risk the agreement sought to address is that of a government nationalization or expropriation of investor property by guaranteeing that if such an event occurs, the foreign investor will be fairly compensated. Without such guarantees of property rights, investment will remain scarce or demand a higher return. On the other hand, many citizens have expressed their concern in letters to the U.S. government that this so-called “takings” provision would place corporate profits above all other concerns. These fears are probably due in part to a recent case brought by an American company against the Canadian government under the investor/state arbitration provisions of the investment chapter of the North American Free Trade Agreement (NAFTA). The case involved an environmental law banning the import and interprovincial transport of the company’s product. The company contended that they should be compensated for losses incurred because of the law and that they were denied equal national treatment. After receiving an adverse ruling on non-environmental grounds in a domestic case related to the same ban, the Canadian government settled the case privately. Moreover, there have been a number of additional investor/state disputes brought under NAFTA against Canada and Mexico on environmental grounds since then, though none have gone through arbitration or award as of yet. These events have people worried over the potential for free trade and investment goals to take priority over environmental, health, or sovereignty concerns. While there is cause for concern regarding the sanctity of environmental laws, there is also reason for concern over clear and blatant use of environmental laws solely for the purpose of protecting domestic firms.

Representatives from NGOs have raised questions about whether the MAI would allow communities and localities to act in their own interest. The concern arises from the provision of nondiscrimination, which may preclude local governments from enacting preferences for local businesses, for example. In the quest for increased free trade and investment, new and creative local sustainability efforts should not be prohibited. Both local and global interests in sustainable development must be considered. Others have expressed concern that in setting environmental standards within investment and trade agreements, localities will not have the discretion to determine the overall balance of environmental laws or regulation that is suited to their particular circumstances.

Several forum participants advocated making adequate information available while reducing barriers to investment. Markets and democratic governance both rely on information to function properly. A related concern is over access to justice. Multilateral investment agreements offer both government-government and investor-government recourse in dispute resolution mechanisms. Several NGOs are concerned, however, that communities and individuals would have to rely on national governments to protect their interests, when not all governments can be relied upon to do so, particularly when high stakes are involved. One panelist suggested that, at a minimum, dispute settlement mechanisms should allow people to file amicus briefs in international arbitration cases to make their opinions known on the issue. This would ensure broader access and input to the arbitral process.

It is incumbent upon a multilateral agreement on investment to ensure that environmental standards are not lowered in order to gain investment. Indeed to promote sustainable development, consideration should be given to raising standards in some cases. Good environmental policies are good economic policies. Proponents of the MAI emphasized that increased trade and investment expand standards of living and wealth, and often, in the case of foreign direct investment, bring the latest technology. Some potential parties to a MAI argue that codifying the rules for encouraging international investment, in place of the many bilateral investment treaties that currently exist, will result in an opportunity to motivate more countries to have high standards for investment and for environmental and worker protection.

One of the principal issues that surfaced during the forum discussion was whether it was possible, and desirable, to link economic goals with environmental and social concerns. Many environmental groups are convinced that these must be linked. Many in the business community, however, maintain that they should remain separate, a view shared by many developing countries. This wide disparity in views stems partly from a failure to understand each other’s perspectives and concerns: the business community often fails to take into account the ecological effects or sociocultural ramifications of a given economic activity; and environmental groups often fail to acknowledge the financial issues, pressures, and cost calculations that affect business decisions.

The forum discussion revealed that the need to address economic, environmental, and social considerations together is not

a universally accepted concept. Yet sustainable development is inherently an integrative effort. For nations to achieve sustainable development, multilateral agreements or processes that affect the economy, the environment, or social equity should be undertaken from a perspective of sustainability and reflect all three areas of concern. International forums should support sustainable development goals, whether these are in the area of finance, trade, or environmental protection. Sustainable development is a process that involves everyone, at all levels of governance. Multilateral agreements must allow for actions taken towards sustainable development at the community or regional level.

It may be useful to reframe the debate on whether it is desirable to put environmental agreements on an equal footing with economic agreements. It is more productive to ask how we can more fully incorporate environmental and social considerations into everyday economic decisions, and incorporate economic concerns into social and environmental issues. More needs to be done, both in research and in practice, to decrease the gulf between social, environmental, and economic values and understanding.

A growing number of individual businesses see the benefits and opportunities of incorporating social and environmental considerations in their core operations.¹³ They are finding that paying greater attention to these issues can help them manage risks and costs in a way that confers competitive advantages. For example, The Dow Chemical Company instituted the WRAP (Waste Reduction Always Pays) program, and announced extensive environmental, health, and safety goals for 2005. The goals involve an environmental code of ethical practices, incident reductions, and resource productivity with an emphasis on pollution prevention. Between 1994 and 1997 Dow's waste-to-production ratio decreased by 11 percent. The company also established a Responsible Care Award to recognize employee efforts worldwide in moving towards the 2005 goals. In 1997, nine teams of finalists in locales ranging from Canada to the Netherlands and from Japan to Brazil each received \$5,000 to give to a nonprofit organization in their community that shares the company's concern for protecting people and the environment.

Some multinational corporations go beyond internal measures to provide training and capacity building for local firms in the countries in which they operate. For example, several member companies of the World Business Council on Sustainable Development are working with the UN Development Program to provide training and mentoring programs for small and medium-sized businesses in developing countries.¹⁴ Multinational companies are increasingly sending environmental trainers to work with their facilities around the world. These companies feel that it is not much additional trouble or expense to have those trainers stay an extra day or two and provide technical assistance in environmental management to interested local companies, technical institutes, and government agencies. Actions like these provide dual benefits: the developing country receives additional expertise, and the company achieves a more certain, and higher quality, environmental regulatory infrastructure.

Companies around the world are making great strides in the name of social commitment. British Petroleum (BP), for example, is committed to making a "distinctive and constructive contribution" in the communities in which they operate. This pledge is perhaps most visible in the company's community programs, such as the popular teaching forum Science Across the World, in which "students in one country share views and information with those in other countries — and by doing so each learns more."¹⁵

As one of the largest employers in Mexico, General Motors (GM) has initiated a number of housing, education, health, and environmental initiatives to promote community development and improve worker quality of life. In a joint agreement with the Mexican government and two builders, GM is helping over 5,000 employees buy homes. Additionally, GM partnered with Habitat for Humanity Mexico to establish a new affiliate in Matamoros and has committed to funding the first two years of administrative costs and the first 50 homes constructed.¹⁶

INTERNATIONAL CAPITAL FLOWS, CLIMATE CHANGE, AND THE CLEAN DEVELOPMENT MECHANISM

Climate change is a critical issue of sustainable development. The effects of predicted sea level rise, changes in weather pat-

terns, and increases in extreme weather events will all directly affect a large proportion of the world's population, including many of the most vulnerable developing nations. Those populations presently least able to increase their standard of living will often be the hardest hit. Low-lying coastal areas such as Bangladesh and small island developing states will experience severe damage if sea level rises by a meter or more due to a high concentration of coastal communities and economic activities.

Article 12 of the Kyoto Protocol establishes the Clean Development Mechanism (CDM) to help developing countries achieve sustainable development while simultaneously reducing greenhouse gas emissions.¹⁷ As the details of the CDM have yet to be formalized, and the Protocol has yet to be ratified, the Council sees the mechanism as providing a timely example through which to examine the relationship between sustainable development and international private capital flows.

The CDM is intended to encourage investments in projects that help put developing nations on a more sustainable path and, in turn, help investor countries earn credits for subsequent greenhouse gas emissions reductions. For example, a company may invest in solar panels to bring electricity to a rural village or install an industrial cogeneration system. The CDM encourages partnerships between “North” and “South,” and between private and public entities, to facilitate technology transfer that contributes to greenhouse gas mitigation. Most agree that the CDM offers great potential for “win-win” investments which help both investors and host countries reach their respective goals, though important issues remain to be resolved. These issues include the role of forest-related and other potential methods for sequestering carbon, and the verifiability of reductions. For a project to qualify under the Clean Development Mechanism, it would have to fulfill the CDM objectives of assisting in achieving sustainable development and reducing global greenhouse gas emissions in ways that ensure reductions are additional and provide real, measurable and long-term benefits to the mitigation of climate change.

To help illuminate some of these issues, the Council, along with six other organizations, convened a Forum on the Clean Development Mechanism and Sustainable Development in July 1998.¹⁸ (See appendix D for a summary of the forum's proceedings.) The dialogue was designed to increase understanding and develop interest in the mechanism as well as to examine the conditions needed to accomplish the mutually interdependent objectives of sustainable development and greenhouse gas reductions. Like the MAI forum, the gathering was not designed to achieve consensus, but rather to further understand various stakeholder perspectives on the CDM. It was also an opportunity for the Council to hear from those who may be involved in future CDM projects and to identify key aspects to include so that the mechanism would be successful in attracting investment to help developing countries in their pursuit of a more sustainable path.

Close to 100 people from the federal government, private industry, and the NGO community participated in the dialogue. They heard presentations on opportunities and key issues in the CDM and spent two hours in small group discussion, sharing their perspectives on specific questions. Participant suggestions on ways to make the CDM a more effective instrument in promoting sustainable development can be found in the box on the next page. These suggestions are presented here for information purposes only and do not reflect a consensus among the participants nor endorsement by the Council.

In general, the presenters had a similar perception of the opportunities presented in the concept behind the CDM — that the mechanism can provide benefits to all participants. Investors would gain by the opportunity to earn credits for reducing emissions where it is less expensive; host country recipients would benefit by gaining technology or other investment which would help them develop more sustainably. Most agreed that it is important to include transparency, efficiency, and accountability in developing the rules and modalities of the CDM, and that the process of figuring out how to implement the CDM effectively should include all stakeholders. Many noted that all stakeholders in both developed and developing countries need a greater awareness and understanding of both the opportunities to be exploited, and the pitfalls to be avoided, in the CDM.

The “Activities Implemented Jointly” (AIJ) pilot phase provides an opportunity to learn from projects in which partnerships are undertaken between two countries to jointly reduce greenhouse gas emissions. Most of the projects in the AIJ pilot fall under the categories of energy efficiency, renewable energy, and forestry management. Although no credit is awarded to these projects, as a pilot program it afforded the opportunity to learn how to make these projects work effectively, how to measure and count reductions, and how to ensure the longevity of reductions as well as the satisfaction of all participants. During the breakout discussion period, several participants suggested that it would be helpful to (1) do a thorough analysis of

the pilot phase and apply those “lessons learned,” and (2) create profiles of model projects to provide a template for projects to be instituted under the CDM. This would help reduce risks for developers and promote more rapid participation, thus resulting in more timely emissions reduction investments. On the other hand, some participants expressed the concern that the AIJ phase not be viewed as a clear CDM roadmap, but rather as a source of learning to contribute to the development of the CDM.

The representative from the Marshall Islands, a small island developing state, echoed the concerns of many environmental groups: overall, these innovative flexibility mechanisms should not be a substitute for greenhouse gas emissions reductions in industrialized countries nor result in a reliance on forestry projects, which are less expensive and on which more research is needed.¹⁹ Developing countries want to ensure that the CDM helps in meeting their most pressing needs — poverty alleviation and sustainable development — as well as in preparing to combat the threats posed by climate change.²⁰

The CDM has the potential to help achieve global climate objectives by encouraging cooperative action to reduce greenhouse gas emissions as developing nations grow. It is also a vehicle for attracting capital towards sustainable development objectives while protecting the climate. As one speaker noted, the mechanism can help promote technology transfer in three principal ways: by improving the value of the overall investment; by allowing shorter contracts or riskier projects to move forward; and by encouraging multinational corporations and others to look at emissions reduction opportunities globally rather than in only the industrialized nations.²¹

Given the CDM’s stated purpose of helping countries achieve sustainable development while reducing global greenhouse gas emissions, it is easy to be optimistic about its potential ability to accomplish these objectives simultaneously. In actuality, however, facilitating the realization of these twin objectives while developing rules to make the CDM operational is not easy — as is so often the case, “the devil is in the details.” The CDM must be transparent, and provide for accountable and verifiable emissions reductions; yet it must also be efficient in order for it to be used. The CDM offers the potential for some reductions to be made at lower cost in areas that do not have an extensive infrastructure already in place. It is vital, however, that inexpensive reductions be meaningful and lasting. Potential recipients want to ensure that they gain the technology and technical assistance that help them develop in an economically, environmentally, and socially beneficial manner.

The process of implementing a CDM that explicitly encompasses sustainable development objectives is a timely example of the challenge of addressing and connecting sustainable development within international agreements. Nonetheless, the difficulty of this challenge should not dissuade the international community from trying to accomplish the integration of sustainable development goals with practical and specific measures.

FUTURE OPPORTUNITIES IN INTEGRATING SUSTAINABLE DEVELOPMENT WITH ISSUES OF INVESTMENT

National councils on sustainable development and financial policymakers and institutions, among other participants in both industrialized and developing countries, should continue the ongoing process of information exchange, stakeholder dialogue, and further study at the international level to sort out the complex issues involved in integrating sustainable development into international economic agreements. The interest and intellectual capacity of a broad array of stakeholders contribute a wealth of knowledge and experience upon which to draw in striving to achieve sustainable development through international agreements.

The global need for “green” development strategies creates new investment opportunities. Domestic policies should enhance America’s ability to take advantage of these trends and support the creation and expansion of businesses, organizations, and techniques that help improve the environment and well-being of citizens around the world. Assistance to other countries should not just be given financially, but should provide the technical expertise, small business development potential, microcredit, information exchange, and other promising activities that build capacity to advance sustainable development more successfully.

Appendix A

Endnotes

CHAPTER 1

1. Council publications may be ordered by calling 1-800-363-3732 or logging onto the Council's Website at <<<http://www.whitehouse.gov/PCSD>>>.
2. "Education for Sustainability: An Agenda for Action" (1997), Washington, DC.; "Materials: A Report by the Interagency Workgroup on Industrial Ecology, Energy and Material Flows, Washington, DC, September, 1998 (available on the Web at <<<http://www.oit.doe.gov/mining/materials/>>>); A more detailed version of this report, "Industrial Ecology, Material and Energy Flow in the United States," A Report Prepared by the U.S. Interagency Working Group on Industrial Ecology, Material and Energy Flow Washington, DC, is forthcoming; "Sustainable Development in the United States, An Experimental Set of Indicators, A Progress Report Prepared by the U.S. Interagency Working Group on Sustainable Development Indicators," Washington, DC. (forthcoming, 1999) (available on the Web at <<<http://www.sdi.gov>>>).
3. President's Council on Sustainable Development (PCSD), *Building on Consensus: A Progress Report on Sustainable America* (Washington, DC: U.S. Government Printing Office, 1997) can be ordered from PCSD by calling 1-800-363-3732 or at <<<http://www.whitehouse.gov/PCSD>>>.
4. <<<http://www.whitehouse.gov/PCSD>>>.
5. President's Council on Sustainable Development, *Sustainable America: A New Consensus for Prosperity Opportunity, and a Healthy Environment* (Washington, DC: U.S. Government Printing Office, 1996), chapter 2.
6. PCSD, *Sustainable America*, p. 8
7. PCSD, *Sustainable America*, p. 9.
8. The 12 areas were Miami, Los Angeles, the San Francisco Bay Area, St. Louis, Chicago, Detroit, Atlanta, the New Jersey-New York-Connecticut tristate area, Cleveland, Boston, Pittsburgh, and Minneapolis-St. Paul.
9. The Council's co-sponsor of the event is the not-for-profit organization, the Global Environment Technology Foundation.

CHAPTER 2

1. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 1995, The Science of Climate Change, Summary for Policymakers* (Cambridge, UK: Cambridge University Press, 1996), p. 10.
2. IPCC, *Climate Change 1995*, p. 8.
3. IPCC, *Climate Change 1995*, p. 11.
4. IPCC, *The Regional Impacts of Climate Change: An Assessment of Vulnerability* (Cambridge, UK: Cambridge University Press, 1998).
5. IPCC, *Climate Change 1995*, p. 13.
6. UN Framework Convention on Climate Change (UNFCCC), article 2, adopted in New York on May 9, 1992. The convention can be accessed at <<<http://www.unfccc.de>>>.
7. UNFCCC, article 3.1.
8. UNFCCC, article 4.2.
9. The six greenhouse gases include carbon dioxide, methane, nitrous oxide, and three manufactured gases (sulfur hexafluoride, perfluorocarbons, and hydrofluorocarbons).
10. Kyoto Protocol to the UN Framework Convention on Climate Change, article 3.1 and annex B. The protocol can be accessed at <<<http://www.unfccc.de>>>.
11. For a discussion of the Clean Development Mechanism, see chapter 5 and appendix D of this report.
12. The protocol will enter into force if 55 nations ratify the agreement. This set of nations must include enough developed countries to account for at least 55 percent of the total 1990 carbon dioxide emissions from developed countries. Current information on the status of nations that have signed and ratified the Framework Convention on Climate Change and the Kyoto Protocol can be obtained at <<<http://www.unfccc.de/fccc/conv/file01.htm>>> and <<<http://www.unfccc.de/fccc/conv/signdate.htm>>>, respectively.
13. Data on carbon dioxide emissions can be found in Carbon Dioxide Information Analysis Center, Environmental Sciences Division, Oak Ridge National Laboratory, *1995 Estimates of CO₂ Emissions From Fossil Fuel Burning and Cement*

- Manufacturing Based on the United Nations Energy Statistics and the U.S. Bureau of Mines Cement Manufacturing Data*, ORNL/CDIAC-25, NDP-030 (Oak Ridge, TN, 1997). Per capita emissions data are presented in World Resources Institute, United Nations Environment Programme, United Nations Development Programme, and World Bank, *World Resources 1998-99* (Oxford, UK: Oxford University Press, 1998), p. 176, figure GC.6.
14. International Energy Agency, *World Energy Outlook 1995* (Paris: Organisation for Economic Co-operation and Development/International Energy Agency, 1995), pp. 48-49.
 15. Announcement by President William J. Clinton on April 21, 1993, cited in President William J. Clinton and Vice President Albert Gore, Jr., *The Climate Change Action Plan* (Washington, DC: U.S. Government Printing Office, 1993), p. i.
 16. For an overview of federal government initiatives to secure voluntary greenhouse gas emissions reductions, see Clinton and Gore, *The Climate Change Action Plan*.
 17. U.S. Department of Energy, Energy Information Agency (DOE), *Annual Energy Outlook, 1998*, DOE/EIA-0383(98) (Washington, DC: U.S. Government Printing Office, 1998), p. 27 and figure 17.
 18. Interlaboratory Working Group on Energy-Efficient and Low-Carbon Technologies, *Scenarios of U.S. Carbon Reductions: Potential Impacts of Energy Technologies by 2010 and Beyond* (Washington, DC: U.S. Department of Energy, 1997), p. 3.10, table 3.4.
 19. The status and prospects for the environmental industry as a whole are discussed in Office of Technology Policy, *Meeting the Challenge: U.S. Industry Faces the 21st Century, The Environmental Industry* (Washington, DC: U.S. Department of Commerce, October 1998).
 20. This evaluation is based on the perception that foreign markets and governments are moving to provide incentives, both economic and political, for early reductions in greenhouse gases and other releases that may become marketable. See also comments made by Steve Percy, BP America, Inc., at the Council's June 4, 1998, public meeting; and by Kenneth Locklin, Energy Investors Fund, at the Council's September 29, 1998, public meeting.
 21. See for example, Robert R. Nordhaus and Stephen C. Fotis, *Analysis of Early Action Crediting Proposals* (Washington, DC: Pew Center on Global Climate Change, 1998); and U.S. General Accounting Office, *Climate Change: Basic Issues in Considering a Credit for Early Action Program*, GAO/RCED-99-23 (Washington, DC: U.S. Government Printing Office, 1999).
 22. Several analyses of the potential of technology to reduce emissions cost effectively have been published. See, for example, Interlaboratory Working Group, *Scenarios of U.S. Carbon Reductions*; and National Academy of Sciences, *Policy Implications of Greenhouse Warming* (Washington, DC: National Academy Press, 1992).
 23. A number of studies on impediments to the introduction and deployment of technology have been published. See, for example, the following publications by the National Science and Technology Council: *Technology for a Sustainable Future: A Framework For Action* (Washington, DC: U.S. Government Printing Office, 1993); *Bridge to a Sustainable Future: National Environmental Technology Strategy* (Washington, DC: U.S. Government Printing Office, 1995); and *National Environmental Technology Strategy: Status and Action* (Washington, DC: U.S. Government Printing Office, 1995). Also see A.K.N. Reddy, "Barriers to Improvements in Energy Efficiency," *Energy Policy* (1991): 953-61. The impediments identified by the Council in this chapter are those that it considers to be the most significant.
 24. Models that do not assume accelerated deployment of existing technologies and rapid development of new technologies generally predict higher costs for reducing greenhouse gas emissions. See, for example, S. DeCanio, "Barriers Within Firms to Energy Efficiency Investments," *Energy Policy* Vol. 21, No. 9 (1993): 901-14; and D.W. Gaskins and J.P. Weyant, "Model Comparisons of the Costs of Reducing CO₂ Emissions," *American Economic Review* Vol. 83, No. 2 (1993): 318-23.
 25. Paul Ehrlich and Anne Ehrlich popularized a theoretical framework for considering the impact of human activity on the environment as: $I = P \times A \times T$ Impact (I) is a function of population (P) times affluence (A, a measure of the scale of resource use and convenience) times technology (T, a measure of the resource, energy, or environmental intensity of the methods that are used to produce and consume goods and services). For a discussion of the basis for the $I = PAT$ formulation, see Paul Ehrlich and Anne Ehrlich, *Population Explosion* (New York: Simon and Schuster, 1990), pp. 58-59.
 26. The potential of each greenhouse gas to warm the atmosphere is different. For example, methane is 21 times more powerful a greenhouse gas than is carbon dioxide. Reporting emissions in MMTCE provides a way to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to carbon dioxide. Consequently, 1 million metric tons of methane emissions are equivalent to 21 MMTCE. For more information, see Office of Policy, Planning and Evaluation, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-1996* (Washington, DC: U.S. Environmental Protection Agency, 1998), pp. 1-6 to 1-7 and table 1-1.

27. Office of Policy, Planning and Evaluation, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, p. ES-2.
28. Contributions of carbon dioxide, methane, and nitrous oxide calculated from data in Office of Policy, Planning and Evaluation, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*.
29. DOE, *Annual Energy Outlook*, p. 75, figure 109.
30. DOE, *Annual Energy Outlook*, pp. 102-103, table A2, and p. 122, table A17.
31. DOE, *Annual Energy Outlook*, p. 111, table A7.
32. Interlaboratory Working Group, *Scenarios of U.S. Carbon Reductions*, p. 4.4, figure 4.1.
33. DOE, *Annual Energy Outlook*, pp. 106-109, tables A4 and A5.
34. The EnergyStar label helps consumers easily identify energy-efficient products. To be eligible for the label, manufacturers must demonstrate that products meets high standards for energy efficiency. Rebuild America is a DOE program that helps people save money by helping them identify options to cut energy use in their buildings.
35. Greenhouse gas emissions from food and wood processing are counted in the industry sector. Emissions from vehicles used for farming, ranching, and timbering are counted in the transportation sector.
36. Office of Policy, Planning and Evaluation, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, p. 5-2, tables 5-1 and 5-2.
37. R. Lal, J.M. Kimble, R.F. Follett, and C.V. Cole, *The Potential of U.S. Cropland to Sequester Carbon and Mitigate the Greenhouse Effect* (Chelsea, MI: Sleeping Bear Press, 1998), p. 9.
38. Office of Policy, Planning and Evaluation, *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, pp. 6-3 to 6-4 and table 6-3.
39. Lal et al., Potential of U.S. Cropland, p. 81, table 40.
40. "Eco-efficient" means a practice that is both economically efficient and environmentally effective.
41. President's Council on Sustainable Development, *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future* (Washington, DC: U.S. Government Printing Office, 1996), pp. 45-47.
42. DOE, *Annual Energy Outlook*, pp. 106-09, tables A4 and A5.
43. W.P. Anderson, P.S. Kanaroglou, and E.J. Miller, "Urban Form, Energy and the Environment: A Review of Issues, Evidence and Policy," *Urban Studies* Vol. 33 (1996).
44. For more detailed information on the sensitivity and adaptation of systems to climate change, see IPCC, "Scientific-Technical Analyses of Impacts, Adaptations and Mitigation of Climate Change, Summary for Policymakers" in *Climate Change 1995*, pp. 28-36; and IPCC, *The Regional Impacts of Climate Change*, pp. 7-8.
45. These examples were presented to the Council by PCSD member Scott Bernstein at the June 1998 public meeting. (Fact-checking was the responsibility of the presenter.) The 211 Atlanta project was described in a personal communication to Mr. Bernstein by Mark O'Connell, President, United Way of Metropolitan Atlanta. Additional information on the DOE-Goldman Sachs partnership can be found on the DOE Website <<<http://www.eren.doe.gov>>> under the subject "International Performance Measurement and Verification Protocol." The concept of location efficiency is discussed in PCSD, *Sustainable America*, pp. 92-93. Further detail on the cost of sprawl can be found in Kevin Kasowski, "Costs of Sprawl Revisited," *Developments*, September 1992; and Robert W. Burchell and David Listokin, *Land, Infrastructure, Housing Costs and Fiscal Impacts Associated With Growth: The Literature on the Impacts of Sprawl Versus Managed Growth* (Washington, DC: Urban Land Institute, 1995). The Great Lakes Energy Network is a project of the High-Performance School Partnership between the Center for Neighborhood Technology and the Chicago and Pittsburgh Public School Districts.

CHAPTER 3

1. More information on the 1939 New York World's Fair can be found at <<<http://amsterdam.park.org:8888/Pavilions/WorldExpositions>>>.
2. 1997 Council Charter Language: "Advise the President on the next steps in building the new environmental management system of the 21st century by reviewing current environmental management reforms (including Project XL and other innovations), further developing a vision of innovative environmental management that fosters sustainable development (environment, economy and equity), and recommending policy improvements and additional opportunities to advance sustainable development. The Council shall report its initial recommendations on environmental management reform to the President no later than Spring 1998 and its broader recommendations on the role of environmental management in sustainable development by December 1998." Revised Charter, President's Council on Sustainable Development, April 25, 1997; and Executive Order No. 12852, July 19, 1993; Further Amendment to Executive Order No. 12852, as amended June 30, 1997.
3. The workplan consisted of three steps. The first step was to conduct a vision exercise to peer forward into the future.

- The second and third steps involved reviewing current environmental management reforms and recommending how to build a new environmental management framework to foster sustainable development.
4. To avoid confusion with environmental management systems (EMSs) we chose the term “framework” to refer to the larger system of environmental management and protection influences.
 5. President’s Council on Sustainable Development, *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future* (Washington, DC: Government Printing Office, 1996).
 6. PCSD, *Sustainable America*, pp. 31-51.
 7. See appendix B-3: Next Generation Reports.
 8. This section and the next present the major concepts that emerged from the Environmental Management Task Force visioning exercise. In this exercise, the task force held two meetings to develop an outline of a new environmental management framework that could serve as a reference point in reviewing current environmental management reforms and making further policy recommendations. The task force surveyed a number of economic, technological, environmental, and societal trends providing the context for discussing a new environmental management framework. We heard opinions from diverse experts on directions these major drivers might take us; this information enabled the task force to form some plausible assumptions about the condition of world in the near future. The exercise then proceeded towards describing a desired state of the world based on the principles and goals of sustainable development. A key objective this exercise was to determine which trends and conditions will need to be modified to achieve more sustainable development and identify the implications for environmental management.
 9. Note that here we have drawn a distinction between continuous and continual in talking about the framework in general, since the collective effect of many continual (repeated process) improvements will be a continuous improvement overall.
 10. Environmental Management Task Force Workplan; Step 2 - Review Process: From the Council charter and as described in the task force workplan, it was agreed to identify and assess a range of current environmental management reforms in light of the developing vision of a sustainable environmental management framework. Due to limitations on time and resources, the initial task force write-ups on current reforms (based on publicly available documentation) were not intended to be technically comprehensive or conclusive. The summaries were also used to conduct a benchmarking evaluation to assist the task force in identifying reforms and their relationship to the attributes and objectives of a new environmental management framework. These attributes, referred to as framework attributes in the materials (see, July 23 Task Force Reference and Meeting Materials), also acted as the basis for benchmarking criteria in the task force review of current environmental management reforms. The review (and the benchmarking) was not intended to measure the general success or failure of the programs involved, the task force was interested to know what reforms were likely to help foster sustainable development.
 11. Dozens of communities are experimenting with “Brownfields Redevelopment” projects to rejuvenate formerly used industrial properties (called “brownfields” to distinguish them from “greenfields,” agricultural and other virgin properties sought for new plant locations).
 12. The Council does not endorse any particular set of environmental management reforms. Current environmental management reforms are referenced in this section for the purpose of illustrating a related activity or concept, and to suggest where progress might be enhanced.
 13. The attributes of a new environmental management framework for fostering sustainable development also served as the basic criteria for the task force’s review of current environmental management reforms (see endnote 8 and 9 supra).
 14. As the task force understands the concept of a “greentrack,” it complements, rather than replaces, the existing regulatory system. Shelley Metzenbaum points out the important difference between “opting out of the command-and-control model” and being allowed to “opt into the alternative track” in, *Making Measurement Matter: The Challenge and Promise of Building a Performance-Focused Environmental Protection System*, (Brookings Institution Center for Public Management, October 1998), pp. 71-73. Ira Feldman discusses, *inter alia*, the idea of utilizing demonstrated environmental performance, including a properly implemented environmental management systems and core performance measures, as the basis for a more flexible system in, “ISO 14000 Can Underpin a New ‘Dual-Track’ Regulatory System: Greentracking as an Alternative to Command and Control,” *Environmental Business Journal* (January 1997), pp.11-15.
 15. The Aspen Institute, *The Stewardship Path to Sustainability of Natural Resources* (Washington, D.C.: The Aspen Institute, forthcoming 1999).
 16. PCSD, *Sustainable America*, p. v.

17. Edward Cohen-Rosenthal, John Bunge, Antonio Ruiz-Quintanilla, "Employee Participation in Pollution Reduction: Preliminary Analysis of the Toxics Release Inventory," *Journal for Cleaner Production* (1996).
18. PCSD, *Sustainable America*, p. 64.
19. Closed-loop systems are those "in which resources and energy flow into production processes, and excess materials are put back into the loop so that little or no waste is generated. Ideally, the loops are closed within a factory, among industries in a region, and within national and global economies"(PCSD, *Sustainable America*, pp. 38-39).
20. PCSD, *Eco-Efficiency Task Force Report* (Washington, DC, 1996) pp. 11-13.
21. In *Sustainable America*, the Council identified the "use of market incentives as a part of an overall environmental management system to achieve environmental and natural resource management objectives, whenever feasible"(p. 50).
22. PCSD, *Sustainable America*, p. 60.
23. A survey of the available literature on the financial performance of investment products that screen or select company stocks according to environmental management performance provides some basis for the assertion that it is possible to analyze publicly traded companies for environmental performance without diminishing a risk-adjusted return. That is, screened stocks can have comparable shareholder return, for instance, with the Standard & Poor's 500 Index). Whether environmentally screened investment products (e.g., socially responsible investment products or mutual funds, etc.) "outperform" the S&P 500 Index or other investment tools is debatable and does not need to be determined for the purposes of measuring and valuing environmental performance. The implication for the overall environmental management framework is that it is possible to measure and assign financial or firm value to the environmental management performance of companies, including energy efficiency and greenhouse gas emissions reductions. See Laura Gottsman and Jon Kessler, "Smart Screened Investments: Environmental-Screened Equity Funds that Perform Like Conventional Funds," *Journal of Investing* Vol. 7, No. 4 (Fall 1998); John Ganzi et al., *Corporate Environmental Performance as a Factor in Industry Decisions: Status Report* (Washington, DC: U.S. Environmental Protection Agency, March 1998); and The Aspen Institute, *Uncovering Value: Integrating Environmental Performance with Financial Performance* (Washington, DC, 1999).
24. U.S. Interagency Working Group on Sustainable Development Indicators, *Sustainable Development in the United States — An Experimental Set of Indicators* (Washington, DC: forthcoming).
25. As used here, an environmental performance metric may include measures of energy use and efficiency, air emissions and toxic releases, water use and discharge quality, waste treatment, etc. Indicators, as defined by the U.S. Interagency Working Group on Sustainable Development Indicators, "are one of many tools for simplifying, quantifying, and communicating vast amounts of information in ways that are more easily understood. They are also useful for alerting us to what areas need more attention, as well as areas that see improvement" (*Sustainable Development in the United States*, p. v). Note that the terms "metric" and "indicator" are sometimes used interchangeably.
26. Pollution Prevention, see *Sustainable America*, p. 30, and National Academy of Engineering, *The Greening of Industrial Ecosystems* (Washington, DC: National Academy Press 1994) p. 98 - 107. Design for the Environment, T.E. Graedel and B.R. Allenby, *Industrial Ecology* (Englewood Cliffs, NJ: Prentice Hall 1995) p. 14. Extended Product Responsibility, see *Sustainable America*, pp. 38-43.
27. As noted earlier, we here consider any greentrack to be supplemental to the current system; however, alternative strategies for administrative efficiency and process-specific requirements that lead directly to demonstrable high environmental performance should be pursued. Any greentrack or alternative performance-based system must address multiple aims as set forth in this section.
28. The Aspen Institute, *The Alternative Path: A Cleaner, Cheaper Way to Protect and Enhance the Environment* (Washington, DC, 1996) outlines particular policy issues that must be addressed in offering operational flexibility in exchange for superior environmental performance and stakeholder involvement. Also see appendix B-3, Next Generation Reports; the convergence of ideas on how to modernize the current system of environmental protection is summarized here by Karl Hausker, former project director of the Enterprise for the Environment at the Center for Strategic and International Studies.
29. Although the results have not yet been fully calculated, the upfront resources and expenses used in new initiatives such as the Environmental Protection Agency's reinvention initiative, Project XL, or other programs with alternative performance goals may be averaged over time and thus ultimately reduce costs. The resources expended to discover how performance options that differ from current practices work, necessarily entails upfront investment. These costs should be expected to create increased efficiency and effectiveness, and thus diminish, if applied on a wider scale over time. Allen Blackman and Janice Mazurek, in discussing Project XL note that "a significant percentage of the costs that...XL

- participants have incurred are likely to have been ‘transitory’ rather than permanent, and we can expect the costs of the program to fall in the future.” (*The Cost of Developing Facility-Specific Environmental Regulations: Evidence from EPA’s Project XL*, (Washington, DC: Resources for the Future, March 16 1999) p. 25. Some argue that a portion of these anticipated savings should be invested in facilitating public participation in project development — for instance, through technical assistance grants to citizen groups. As Jody Freeman puts it, “agencies must view building the capacity of communities — that is, their technical and financial ability to participate in the regulatory process — as part of their missions” (“Collaborative Governance in the Administrative State,” 45 *UCLA L. Rev.* 1, 81 (1997)). Michael McCloskey identifies the confounding or deleterious effects that local decisionmaking can sometimes have on national environmental goals in “Limits to Collaboration,” *Harper’s Magazine* (November 1996), pp. 24-36.
30. As used here, the term “regional” refers to discernible areas that may encompass a broader locale than may be defined by governing districts, communities, or states. It also suggests the possibility of organizing activity with respect to biological ecosystems or “bio-regions” where feasible.
 31. Multijurisdictional means the collaboration or coordination of multiple jurisdictions such as municipalities, counties, districts, states, regulated sectors, or other such levels of organization.
 32. Bullard, Robert D., *Unequal Protection - Environmental Justice and Communities of Color* (Sierra Club, San Francisco 1994).

CHAPTER 4

1. The Council’s previous work on sustainable communities is documented in chapter 4 of *Sustainable America: A New Consensus for Prosperity Opportunity, and a Healthy Environment* (Washington, DC: U.S. Government Printing Office, 1996) and in the associated *Sustainable Communities Task Force Report* (Washington, DC: PCSD, 1997).
2. Vice President Al Gore, September 1998 speech, Brookings Institution, Washington, DC.
3. Winifred Gallagher, *The Power of Place: How Our Surroundings Shape Our Thoughts, Emotions, and Actions* (New York, NY: Poseidon Press, 1993).
4. James Howard Kunstler, *The Geography of Nowhere: The Rise and Decline of America’s Manmade Landscapes* (New York, NY: Touchstone, 1993).
5. The Joint Center for Sustainable Communities, *The Role of Metropolitan Areas in the U.S. Economy* (Washington, DC, 1998). The report, prepared for the Joint Center by Standard and Poor’s DRI, compiles gross metropolitan product data for the largest 314 metropolitan areas that are analogous and can be compared to gross domestic product for countries and gross state product for states. The report shows that “if metropolitan economies were ranked as nations, 47 of the world’s largest 100 economies would be U.S. metro areas.”
6. PCSD, *Building on Consensus: A Progress Report on Sustainable America* (Washington, DC, January 1997).
7. For more information about the Joint Center for Sustainable Communities, see its Website at <<<http://www.naco.org/programs/special/center>>>.
8. For a copy of a videotape describing the activities of the Pacific Northwest Regional Council, contact the Columbia River Inter-Tribal Fish Commission, 729 Northeast Oregon Street #200, Portland, Oregon 97232; phone (503) 238-0667.
9. S.C. Johnson Wax, The S.C. Johnson Public Report (Racine, WI, 1998), p. 4.
10. For more information about the Smart Growth Network, see its Website at <<<http://www.smartgrowth.org>>>.
11. For more information about The Metropolitan Initiative and the results from the 12 forums, see <<<http://www.cnt.org>>>. Also see Carl Vogel et al., “Forums Bring Together Diverse Regional Voices,” *The Neighborhood Works*, Vol. 20, No. 6 (November/December 1997), pp. 22-36.
12. For more information about the Cape Charles eco-industrial development, see the Website at <<<http://www.cfe.cornell.edu/wei/capecharles.html>>>.
13. Phyllis Myers, *Livability at the Ballot Box: State and Local Referenda on Parks, Conservation, and Smarter Growth, Election Day 1998* (Washington, DC: Brookings Institution Center on Urban and Metropolitan Policy, 1999).
14. Smart Growth Network Website, 1999 Governors for Smart Growth, *Smart Growth Library*, <<<http://www.smartgrowth.org/library/governor99.html>>>. The library summarizes and quotes the smart growth and livability initiatives and goals found in two dozen gubernatorial state of the state or inaugural addresses.
15. Brendan L. Koerner, “Cities That Work,” *U.S. News and World Report*, June 8, 1998.
16. Benjamin Goldman, *Sustainable America: New Public Policy for the 21st Century* (Washington, DC: U.S. Department of Commerce, Economic Development Administration, 1995). Environmental Business International Inc. (EBI) compiled the information about the size of the environmental industry published in, International Trade Administration, *Environmental Industry of the United States: Overview by State and Metropolitan Statistical Area*, (Washington, DC: U.S. Department of Commerce, September 1997). The environmental industry is defined as those goods and services used

- in regulatory compliance plus the sale of clean water, energy efficiency, and resources recovered from post-consumer waste or industrial byproducts. By this definition, the U.S. environmental industry comprises 115,400 companies, according to EBI. In 1996, these companies employed 1,286,500 persons and had \$178.3 billion in revenues and \$15.8 billion in exports.
17. For details on the Clinton-Gore Livability Agenda, see the Website, <<<http://www.whitehouse.gov/WH/SOTU99/lcom.html>>>.
 18. For information about the Livable Communities Task Force, see <<<http://www.house.gov/blumenauer/lctf.htm>>>. The task force was created by Congressman Earl Blumenauer of Oregon during the 105th Congress; at the time of this report's publication, it was co-chaired by Reps. Tom Allen (Maine), Elija Cummings (Maryland), and Chakah Fattah (Pennsylvania).
 19. Peter Newman and Jeffrey Kenworthy, *Sustainability and Cities: Overcoming Automobile Dependence* (Washington, DC: Island Press, 1999).
 20. The Metropolitan and Rural Strategies Task Force convened 60 people to identify promising strategies for four of these areas (green infrastructure was added at a subsequent meeting). The findings for advancing progress in each of these areas are documented in PCSD, *People, Places, and Markets: Comprehensive Strategies for Building Sustainable Communities, Workshop Proceedings*, June 28-30, 1998, Warrenton, Virginia (Washington, DC, 1998).
 21. Roger Bolton, "An Economic Interpretation of a Sense of Place." *Paper no. RPI30*. (Williamstown, MA: Williams College, Department of Economics, January 1989). See also his review of the 30-year history of arguments for and against place-based policies, "Place Prosperity Versus People Policy Revisited: An Old Issue with a New Angle," *Urban Studies* Vol. 29, pp. 185-203.
 22. Lamont Hempel and Tom Horan, *Roots and Wings* (Claremont, CA: Claremont Graduate School, 1996).
 23. For theoretical and practical applications of asset-building, see Michael Sherraden, *Assets and the Poor: A New American Welfare Policy* (Armonk, NY: M.E. Sharpe, 1991); and John McKnight and John Kretzmann, *Building Communities From the Inside Out* (Evanston, IL: Northwestern University, 1995).
 24. PCSD, *Sustainable America*, p. 52.
 25. Appendix C-2 provides tables that show how the tools of information and technical assistance, economic incentives and financial assistance, and local capacity and partnerships can be tailored to advance progress in the five issue areas.
 26. PCSD, *Sustainable America*, p. 58.
 27. American Planning Association, Research Department, *Land-Based Classification Standards*, <<<http://www.planning.org/lbcs>>>, November 21, 1998.
 28. PCSD, *Education for Sustainability: An Agenda for Action* (Washington, DC: U.S. Government Printing Office, 1996).
 29. Maine Rural Development Council, *Evaluation of the Multi-Agency Service Team Approach to the Delivery of Business and Technical Assistance in Support of the Maine Secondary Wood Products Industry (1997)*. Report is available at <<<http://mrdc.umext.maine.edu/mast/intro.htm#P1>>>.
 30. The majority of American communities are not yet wired for wide-spectrum telecommunications, and there is as yet no plan to guarantee that the "last mile" of high-capacity hookup will reach older and lower income communities (which will nonetheless help pay for system upgrade and modernization). The Federal Communications Commission (FCC) is working to implement the Snowe-Rockefeller provision of the Telecommunications Act, which requires the FCC to ensure that public libraries, as well as schools and rural health care providers, can obtain telecommunications services at affordable rates. Libraries, in particular, could provide the means of access to electronic information for those households that lack an Internet connection. See U.S. Office of Technology Assessment, *Technological Reshaping of Urban America*. (Washington, DC: U.S. Congress, 1995); and Nicholas Negroponte, in "Information for the 21st Century," *Scientific American*, January 1995.
 31. PCSD, *Sustainable America*, pp. 101-107.
 32. Alice Shabecoff et al., *Green Jobs, Green Communities*, prepared for the Joyce Foundation (Washington, DC: Community Information Exchange, 1998).
 33. For more information on IDAs, see the Website for the Corporation for Enterprise Development, <<<http://www.cfed.org/idasusas.htm>>>.
 34. Peter Barnes, "Who Owns the Sky?," *1997 Entrepreneurial Economy Review*, 1997.
 35. For more information on LEMs, see Kim Hoeveler, "Accessibility vs. Mobility: The Location Efficient Mortgage," *Public Investment*, September 1997 (Washington, DC: American Planning Association). Also see the Center for Neighborhood Technology Website at <<<http://www.cnt.org>>>.
 36. EPA, *The Transportation and Environmental Impacts of Infill Versus Greenfield Development: A Comparative Case Study*

- Analysis* (Washington, DC, 1998).
37. The Forest Bank concept is under development by The Nature Conservancy in several sites, including southwest Virginia. Through the Bank a forest landowner can deposit timber rights and receive immediately an annual annuity at a fixed percentage of the timber's value. The Nature Conservancy will take over responsibility for the management and eventual harvest of the timber using sustainable forestry principles that will not degrade the land or impair the habitat of endangered species, and the local economy will benefit as higher quality timber is moved to the marketplace
 38. PCSD, *People, Places, and Markets*.
 39. Environmental Law Institute, *Linking Tax Law and Sustainable Urban Development: The Taxpayer Relief Act of 1997* (Washington, DC, 1998).
 40. For examples of similar forums engaging the private sector in community reinvestment, see American Assembly, *Community Capitalism: Rediscovering Markets of America's Urban Neighborhoods*, proceedings of the 91st American Assembly, April 17-20, 1997, Harriman, New York, (New York, 1997).
 41. The Portland, Oregon, growth management initiative is described in PCSD, *Sustainable Community Task Force Report* (Washington, DC, 1996), p. 27. The states' initiatives are described in Appendix C-2.
 42. U.S. Small Business Administration, *The Facts About Small Business* (Washington, DC, May 1996).
 43. See Margaret Pugh, *Barriers to Work: The Spatial Divide Between Jobs and Welfare Recipients in Metropolitan Areas* (Washington, DC: Brookings Institution, Center on Urban and Metropolitan Policy, September 1998); and U.S. Department of Transportation, *Access to Jobs: Job Access and the Metropolitan Transportation Planning Process in Hartford, St. Louis, and Detroit* (Washington, DC, August 1997).
 44. PCSD, Building on Consensus.
 45. National Academy of Public Administration, *Building Stronger Communities and Regions: Can the Federal Government Help?* (Washington, DC, March 1998).
 46. Council on Economic Advisors, *Fact Book, Changing America, CEA Fact Book* (Washington, DC, 1998). The racial classifications are those used by the U.S. Census Bureau, as determined by the *Standards for the Classification of Federal Data*

In recent years, there has been a remarkable convergence of ideas on how the nation should improve its environmental protection system. The ideas have emerged from reports by Presidential and Congressional commissions, consensus-building forums, expert panels, and individual authors. All of these reports call for evolutionary change in the nation's environmental protection system. Without such change, the reports argue, the U.S. will be unable to meet the environmental challenges of today, nor those looming in the next century.

Various authors have described this evolutionary change as regulatory "reinvention" or "innovation" or "reform." Other authors have described it as the "next generation" or "second generation" of environmental policy... Unlike reports or policy dialogues that focus on a particular environmental statute or problem,² next generation reports addressed *systemic* issues concerning how the nation protects the environment...

Environmental progress requires *more* of the evolutionary change that is already underway as the next generation of environmental protection takes shape. The current system, consisting mainly of end-of-pipe, technology-based regulations, is inadequate for the challenges ahead, despite its many accomplishments over the past three decades. The challenge for the U.S. and for all nations is to protect and restore the natural environment while providing for the economics needs of a population that will grow by at least several billion more people. This will require, among other things: that pollution be limited not by the "best available technology" or some variant thereof, but by limits determined by human and ecological health; that industry undergo a "green revolution" resulting in products and processes that generate dramatically less waste and that channel remaining wastes back into production rather than into the environment; and that society find far more effective means of reducing the environmental impact of the day-to-day decisions of billions of people in their roles as consumers, workers, drivers, farmers, etc. We will fail in these tasks unless the environmental protection system evolves in the directions outlined by next generation reports: toward a more performance-based, information-rich, technology-spurring, flexible, accountable regulatory system; toward a broader array of policy tools that promote continuous environmental improvement, including environmental taxes, subsidy reform, emissions trading, and information disclosure; and toward stronger private sector management systems that internalize the same stewardship ethics embodied in environmental statutes.

*The PCSD expressed the need for change as follows:*³

For the last 25 years, government has relied on command-and-control regulation as its primary tool for environmental management. In looking to the future, society needs to adopt a wider range of strategic environmental protection approaches that embrace the essential components of sustainable development... We, as a Council, have concluded that this will require the nation to develop a new framework for a new century...

Learning to use new approaches to achieve interrelated goals simultaneously will be an evolutionary process. It needs to build on the strengths and overcome the limitations of current economic and regulatory systems and recognize the interrelationships between economic and environmental policies. This will require pursuing change concurrently on two paths: making the existing regulatory system more efficient and more effective, and developing an alternative system of environmental management that uses innovative approaches.

Washington Post, November 9, 1998, pp. A1 and A12. See also Joel Kotkin, "White Flight to the Fringes," *The Washington Post*, March 10, 1996, pp. C1 and C2.

48. *The President's Initiative on Race, Pathways to One America in the 21st Century: Promising Practices for Racial Reconciliation* (Washington, DC, 1998); see the Website at <<[http://www.whitehouse.gov/Initiatives/One America/face.html](http://www.whitehouse.gov/Initiatives/OneAmerica/face.html)>>.
 49. National Academy of Public Administration, *Building Stronger Communities and Regions*, p. 47.
- A. In a May 1997 article in the journal *Nature*, several ecologists and economists identified 17 services provided by ecosystems, noting that "the services of ecological systems and the natural capital stocks that produce them are critical to the function of the Earth's life support system. They contribute to human welfare, both directly and indirectly, and therefore represent part of the total economic value of the planet." These services include replenishing nutrients and soils for agriculture, sustaining biodiversity which furnishes herbs and medications, naturally filtering air and water, and providing habitat for wildlife and amenities for people. Robert Constanza et al., "The Value of the World's Ecosystem Services and Natural Capital," *Nature*, May 15, 1997.
 - B. Green infrastructure strategies range from the simple to the complex. They include tree planting to reduce summertime temperatures in urban areas, conversion of abandoned railroad tracks to develop green corridors for pedestrians and cyclists, and creation of rooftop garden. More complex strategies include stormwater management, erosion prevention, sediment control for construction sites, wetlands creation and stewardship, and urban design for watershed protection. In an example of a more sophisticated green infrastructure approach, New York City's Jamaica Bay Watershed Management Plan combined reliance on natural processes and engineering solutions, to reduce the cost of clean water compliance — from \$2.3 billion to \$1.2 billion — and protect open space. Albert F. Appleton, "The Challenge of Providing Future Infrastructure in an Environment of Limited Resources, New Technologies, and Changing Social Paradigms," paper presented to the National Research Council Board on Infrastructure and the Constructed Environment, Washington, DC, March 24, 1995.
 - C. See Robert Burchell et al., *Costs of Sprawl Revisited* (Washington, DC: National Academy of Sciences, National Research Council, 1998); and James Frank, *The Costs of Alternative Development Patterns: A Review of the Literature* (Washington, DC: Urban Land Institute, 1989). Although sprawled development provides immediate and direct benefits to the people who move to outer areas, the costs are longer term and are borne by society at large. Due in part to dispersed settlement patterns, Americans drive 2.5 trillion miles annually, exacerbating congestion, air pollution, and the carbon dioxide that contributes to global climate change. Moreover, since 1970, nearly 6 million middle-income and affluent households have left central cities, exacerbating class and racial segregation within regions. Despite the short-term benefits of moving outward, research shows that, over time, economic and social problems as well as the pattern of disinvestment migrate from cities to suburbs. See Thomas E. Bier, "Public Policy Against Itself: Investments that Help Bring Cleveland (and Eventually Suburbs) Down," in *Cleveland Development: A Dissenting View*, Alvin Schorr, ed. (Cleveland: David Press, 1991); David Rusk, *Cities Without Suburbs* (Washington, DC: Woodrow Wilson Center Press, 1993); and Myron Orfield, *Metropolitica: A Regional Agenda for Community and Stability*

- (Washington, DC: Brookings Institution Press, 1997).
- D. The Sierra Club, "The National Sprawl Fact Sheet," <<<http://www.sierraclub.org>>>. The reasons for sprawl vary for each place, but are compounded by subsidization of new exurban infrastructure (for example, transportation, sewer, and water service); population pressures; and migration of people and businesses from cities to suburbs. See Scott Bernstein, "Imagining Equity," *Environment and Planning*, December 1993; and David Bollier, *How Smart Growth Can Stop Sprawl* (Washington, DC: Essential Books, 1998).
 - E. For a comprehensive overview of community development challenges, including racial and geographic dimensions, see U.S. Department of Housing and Urban Development, *The State of the Nation's Cities* reports (Washington, DC, 1998). See also Robert H. McNulty and Clinton A. Page, eds., *The State of the American Community: Empowerment for Local Action* (Washington, DC: Partners for Livable Communities, 1994).
 - F. Various studies demonstrate that significant retail purchasing power is "leaking" out of poor communities in metropolitan and rural areas and that this aggregated market demand could be cost-effectively served by new retail facilities within the communities themselves. In Chicago, Michael Porter, an economist at Harvard Business School, estimated that in the inner city core communities of Chicago's West and South Sides alone, the market was overlooking \$2 billion per year in purchasing power. A joint analysis by Chicago United and the Center for Neighborhood Technology estimated that the total purchasing power within a 2-mile radius of a single rail transit stop in West Garfield Park is \$2 billion per year. See Michael Porter, "The Competitive Advantage of the Inner City," *Harvard Business Review*, May/June 1995; and Robert Weissbourd et al., *The Market Potential of Innercity Neighborhoods* (Washington, DC: Brookings Institution, Center for Urban and Metropolitan Policy, 1999).
 - G. Since the end of World War II, America has shifted 1 million acres of land per year from natural resource-based uses to urban/suburban uses. Agricultural and forestry efforts have also increased pressures on environmental and natural resources, particularly water contamination from pesticides, soil erosion, and organic waste. Although about 25 percent of the nation's poor live in rural areas, rural America is home to about 30 percent of the working poor because of the prevalence of low-skill, low-wage jobs. Work in traditional rural industries, such as farming, livestock, and fishing, does not guarantee that a family will be lifted out of poverty. Nearly 98 percent of those working on farms, for example, require off-farm income to support their families. All figures cited are from U.S. Department of Agriculture, Economic Research Service, *Rural Conditions and Trends*, Vol. 8, No. 2, 1998.
 - H. For strategies on sustainable rural enterprise and community development, see Michael Kinsley, *Economic Renewal: A Guide for Sustainable Community Development* (Snowmass, CO: Rocky Mountain Institute, 1997); PCSD, *Sustainable Agriculture Task Force Report*; and PCSD, *Natural Resources Task Force Report* (Washington, DC, forthcoming).
 - I. A good source of case studies on resource efficiency in the context of community development is the U.S. Department of Energy (DOE) Tool Box, which includes the PLACE3S Guidebook, Smart places software, and Green Development CD-ROM. Case studies are also documented on DOE's Website on sustainable community development at <<<http://www.sustainable.doe.gov>>>.
 - J. For example, the number of U.S. curbside pickup programs for recyclables grew from 1,042 in 1988 to 6,678 in 1993. See John E. Young and Aaron Sachs, *The Next Efficiency Revolution: Creating a Sustainable Materials Economy*, Worldwatch Paper No. 121 (Washington, DC: Worldwatch Institute, 1994). In 10 Northeastern states alone, more than 103,000 people are employed in firms that process or manufacture recycled materials, adding more than \$7.2 billion in value to recovered materials. See Institute of Scrap Recycling Industries fact sheet, <<<http://www.isri.org>>>, 1998. Also see Neal Peirce, "Recycling the Urban Junkyard," *The Washington Post*, April 5, 1998.
 - K. Robert Lund and William Hauser, *The Remanufacturing Industry in the United States* (Boston: Boston University, 1997).
 - L. This information is from preliminary findings of the Institute for Local Self-Reliance, Washington, DC, 1998, which further estimates that deconstruction requires significantly more labor than traditional demolition, creating 10 to 15 times as many jobs.
 - M. PCSD, *Eco-Industrial Park Workshop Proceedings*, October 17-18, 1996, Cape Charles, Virginia (Washington, DC, 1997). The Cornell Work and Environment Initiative coordinates an Eco-Industrial Development Roundtable and tracks the status of several eco-industrial park developments around the country; see <<<http://www.cfe.cornell.edu/wei>>>.

CHAPTER 5

1. PCSD, *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future* (Washington, DC: U.S. Government Printing Office, 1996), p. 156; and World Resources Institute, United Nations

- Environment Programme, United Nations Development Programme, and World Bank, *World Resources 1998-99* (Oxford: Oxford University Press, 1998), pp. 236-37.
2. This theme of international leadership in an environmental context was presented in chapter 7 of *Sustainable America*.
 3. Remarks by U.S. Secretary of Commerce William M. Daley at the President's Export Council Virtual Trade Mission, November 10, 1998.
 4. World Bank, *1998 World Development Indicators* (Washington, DC: International Bank for Reconstruction and Development, 1998), p. 312. Gross private capital flows are calculated in table 6.1 as the sum of the absolute values of direct, portfolio, and other investment inflows and outflows recorded in the balance of payments.
 5. World Bank, *Global Development Finance 1998* (Washington, DC: International Bank for Reconstruction and Development, 1998), p. 3.
 6. Hillary French, *Investing in the Future: Harnessing Private Capital Flows for Environmentally Sustainable Development* (Washington, DC: Worldwatch Institute, 1998), p. 9.
 7. For more information, see the UN Financing for Development Website, <<<http://www.un.org/esa/analysis/ffd/ffd.htm>>>.
 8. Environmental aspects of FDI are discussed by Bradford S. Gentry, *Foreign Direct Investment and the Environment: Boon or Bane?*, background paper for the OECD Conference on Foreign Direct Investment and the Environment, The Hague, January 28-29, 1999 (New Haven: Yale Center for Environmental Law and Policy, 1999).
 9. For more information, see the Sister Cities International Website at <<<http://www.sister-cities.org>>>.
 10. Excerpt from the MAI Website, <<<http://www.oecd.org/daf/cm/mai/mainindex.htm#top>>>: "Negotiations on the MAI are no longer taking place. However, the officials agreed on the importance of multidisciplinary work on investment at OECD. There are a number of important issues on which further analytical work and inter-governmental cooperation are needed. The officials agreed that this work should be carried out in a transparent manner and should involve all OECD members as well as interested non-member countries, including those that participated as observers in the negotiations."
 11. The late 1970s and early 1980s were marked by a debt crisis, mainly affecting Latin America, when an abundance of foreign investment was available due to the surplus of oil revenues. See, e.g., Robert Gilpin, *The Political Economy of International Relations* (Princeton, NJ: Princeton University Press, 1987). The 1990s have seen periodic financial crises in one country expand to other emerging markets: the Mexican peso crisis produced the so-called "Tequila effect" and, in the past year, financial crises in Asia, Russia, and now Brazil. See, e.g., the CNN Financial Network report "Devaluation Deja-Vu: Brazil's Crisis Is Like Episodes in Mexico, Asia and Russia - Except It's Different," January 14, 1999, <<http://cnnfn.com/worldbiz/9901/14/brazil_russia>>.
 12. For analyses of the relationship between financing and the environment, see, e.g., French, *Investing in the Future*, or Bradford Gentry, ed. *Private Capital Flows and the Environment: Lessons From Latin America* (Cheltenham, UK: Edward Elgar, 1999). For a primer on how the financial services industry operates and areas of potential environmental leverage, see John Ganzi, Frances Seymour, and Sandy Buffet, *Leverage for the Environment: A Guide to the Private Financial Services Industry* (Washington, DC: World Resources Institute 1998). For analyses of the emerging market financial crises and effects on society and development, see, e.g., World Bank, *Global Economic Prospects and the Developing Countries 1998/99: Beyond Financial Crisis* (Washington, DC: World Bank, 1998).
 13. Arnst, Catherine et al. "When Green Begets Green," *Business Week*, November 10, 1997, pp. 98-106.
 14. Gentry, *Foreign Direct Investment and the Environment*.
 15. See the Science Across the World program Website, <<<http://www.bp.com/saw/english/core.html>>>.
 16. Personal communication, General Motors Corporation liaisons to the PCSD, February 1999.
 17. The Clean Development Mechanism is defined in Article 12 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. Its purpose is stated in Article 12.2: "The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their qualified emission limitation and reduction commitments under Article 3." (Annex I countries are the industrialized countries.)
 18. The co-convening organizations were: the Alliance to Save Energy, the Business Council for Sustainable Energy, Edison Electric Institute, International Climate Change Partnership, and the United States Council for International Business.
 19. The CDM does not specify whether forestry projects, so-called carbon "sinks," are included, leading to a debate over

whether the omission means that “sinks” projects should be included in the CDM. The Intergovernmental Panel on Climate Change is currently studying the issue of carbon sequestration, and the Conference of the Parties (the signatories to the United Nations Framework Convention on Climate Change) has deferred further action until this report is released.

20. The CDM does call for “a share of the proceeds from certified project activities [to be] used...to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation” (Article 12.8).
21. Presentation by Mark Hall, Director of Government Affairs, Trigen Energy Corporation, Forum on the Clean Development Mechanism and Sustainable Development, July 27, 1998 (see appendix D).

APPENDIX B

ENVIRONMENTAL MANAGEMENT

- B - 1** • Society requires a novel kind of regulation to make a true industrial ecology possible. Frustrations with regulation frequently arise because we have fostered and developed environmental laws that attempt to deal with one problem at a time...Well-meant environmental regulation can have the bizarre effect of increasing both the amount of waste created and the amount to be disposed, because it puts up high barriers to reuse. .. A priority for the future will be a cleanup of that aspect of the nation's regulatory machinery.³⁷

ENVIRONMENTAL PERFORMANCE INDICATORS: THE NEED FOR COMMON MEASURES

The value of environmental performance information is under threat of being diminished by the proliferation of differing approaches. It is often difficult to develop sufficiently comparable information on environmental performance across a single company, let alone a whole sector or nation. The problems are further compounded by differing definitions from one country to another — not to mention the difficulty created when locally developed metrics are too insular or do not reflect accepted national standards or goals.

Thus, one of the most important challenges ahead is to devise metrics that serve the specific needs of users while simultaneously contributing to greater comparability across firms, communities, industries, states, and nations. There is no single simple answer to this. For example, “compliance with regulations” is often predicated on definitions of how performance is measured (e.g., pollutant concentrations in wastewater discharge, total rates of pollutant releases, or effects on ambient levels. Thus, overhauling the U.S. Environmental Protection Agency's (EPA's) information management systems — to build in some core metrics across air, water, and waste programs, for instance — could help focus corporate and public attention on the most significant elements of performance.

Essentially, who will build — and how — the necessary architecture to collect, manage, analyze, and disseminate information will depend on the specific type of information under consideration:

- Environmental performance metrics/indicators that measure potential human stresses on the environment (e.g., pollutant releases, transportation, natural resource depletion, etc.);
- Environmental management indicators that measure efforts to reduce or mitigate environmental effects (e.g., regulatory programs, corporate environmental performance, and community, state, or national levels of performance);
- Environmental condition indicators that measure environmental quality (e.g., ambient air or water quality — these can again be at the local, state, or national level); and
- National accounting information that tracks natural resources and natural assets at the state and national levels (e.g., the equivalent of the green gross domestic product — GDP); and internally, managerial accounting practices that track environmental management performance and value within facilities, organizations, and firms.

Various reporting initiatives are presently under development. Although these are moving in different directions both domestically and worldwide, most begin with voluntary corporate environmental performance reporting or a specific set of indicators: ISO 14032 (the International Organization for Standardization's ISO's Environmental Performance Evaluation), the Environmental Defense Fund's Scorecard, and the Global Reporting Initiative (Coalition for Environmental Responsible Economies), to name a few.

Responding to the question of whether a standardized reporting framework can be achieved, the Global Reporting Initiative — spearheaded by a multistakeholder coalition which includes nongovernmental organizations (NGOs), accounting associations, the United Nations Environmental Programme, and various businesses — is initially aiming to develop a set of common performance metrics for voluntary corporate environmental reporting (approximately 1,500 companies now report worldwide). The project's design goal is to develop a standardized reporting guideline reflecting the three dimensions

of sustainability. Indicators for economic and social aspects would be added as agreement for such indicators is reached.

Examples of international opportunities to standardize metrics include the Organisation for Economic Co-operation and Development's "Pollutant Release and Transfer Registers" (essentially the development of Toxics Release Inventory-like reporting systems in other countries); the Montreal Protocol on ozone-depleting substances); the newly signed Rotterdam Convention on prior informed consent for trade in chemicals and pesticides; the Kyoto agreements on climate protection; and the biodiversity convention. These processes are among the opportunities for developing consistent metrics for keeping score on environmental performance worldwide.

In September 1998, the President's Council on Sustainable Development's Environmental Management Task Force co-hosted a roundtable discussion with EPA Region IX's Merit Partnership for Pollution Prevention on the financial and environmental performance aspects of environmental management systems (EMSs). Approximately 60 companies participated in this one-day meeting directed toward discussing how companies approach environmental management as a business and financial matter with particular attention to the emergence and adoption of EMSs, including ISO 14001. The meeting, which emphasized sustainable development goals, identified general recommendations about the need to work with the financial industry to further develop material environmental management indicators, the potential relevance of EMSs to performance-based regulatory programs, and the need to distinguish between the adoption of EMSs and the development of environmental performance evaluating criteria.

B - 2 . ENVIRONMENTAL MANAGEMENT SYSTEMS AND ISO 14001

A diverse group of organizations, associations, private corporations, and governments have been developing and implementing EMS frameworks for the past 30 years. For example, the Chemical Manufacturers Association created its own standard called Responsible Care. Similarly, the English, French, Irish, Dutch, and Spanish governments have developed their own voluntary EMS standards.

The possibility that these diverse EMS frameworks could result in barriers to international trade led to a heightened interest in formulating an international consensus standard for EMSs. To that end, the ISO, which is comprised of representatives from industry, government, NGOs, and other entities, finalized the ISO 14001 EMS standard in September 1996. The intent of this standard is "to provide organizations with the elements of an effective environmental management system which can be integrated with other management requirements to assist organizations to achieve environmental and economic goals."

A product of this standards development effort is a single format for EMSs which can accommodate varied applications all over the world. ISO 14001 is unique among the ISO 14000 standards because it can be used to audit internal management systems objectively for the purposes of self-declaration or third-party certification of the system's conformity with an organization's stated environmental policy and goals.

Many organizations recognize the inherent business advantages of EMSs and are implementing them. In a future environmental management framework, some high-performing firms may want to make their EMSs a component of alternative regulatory strategies. In these instances, the use of EMSs — including properly implemented ISO 14001 — could have the potential to affect our shared environment; implementation would then be of concern to public policymakers. Efforts are under way to gather credible and compatible information to address key public policy issues adequately. The following categories are areas of interest and concern to public policymakers.

1. **Environmental Performance.** The impact a facility has on the environment is of paramount importance to a regulator's assessment of EMSs. Thus, it is critical to measure any change in a facility's environmental performance that might be attributable to implementation of an EMS.
2. **Compliance.** Implementation of an EMS has the potential to improve an organization's environmental compliance with regulatory requirements. The goal of collecting compliance information is to be able to measure the relationship between an EMS and compliance with local, state, and federal environmental regulations and standards.
3. **Pollution Prevention.** Pollution prevention is a significant public policy goal. The reduction, elimination, reuse, recycle,

and treatment of waste can have an impact on an organization by reducing costs and risks. These actions also enhance the quality of the work environment and ecosystem. Therefore, better understanding the relationship between an organization's overall performance and the role of pollution prevention in the organization's EMS has social, economic, and environmental implications.

4. **Environmental Conditions.** To understand the impact of an EMS on the environment, it is necessary to know something about the status of the ambient environment surrounding the facility prior to EMS implementation. Such an analysis not only helps evaluate the effectiveness of the EMS, it also provides a basis for facility managers to shape and prioritize their environmental policies and objectives. Data on environmental conditions will help all parties determine the sustainability of certain human activities from environmental, economic, and social perspectives.
5. **Costs/Benefits to Implementing Facilities.** There has been much speculation about the relative costs and benefits associated with the implementation of an EMS. More organizations that are implementing EMSs need to collect cost data, which should answer questions concerning possible net financial benefits that might accompany improved compliance and increased environmental performance, and whether higher levels of environmental performance are cost prohibitive. This information could encourage firms to adopt EMSs and strive to become high performers.
6. **Stakeholder Confidence.** The perceived success or failure of an EMS when used as part of a firm's overall environmental strategy is based in part on external stakeholder evaluation of the effort. It is important to look at the amount and degree of stakeholder participation in both the development and implementation of an organization's EMS.
7. **Third-Party Audits and Certification.** The assessment of the EMS can be conducted by third-party auditors and certifiers; in many cases, this is already being done. Agreement needs to be reached by and among the auditing/certifying professionals, the companies being assessed, and the relevant regulatory bodies as to whether certification is adequate to ensure consistency in the knowledge, skills, and competency of those conducting audits.

B - 3 . N E X T G E N E R A T I O N R E P O R T S

Ideas on how to modernize the current system of environmental protection are summarized in a recent manuscript by Karl Hausker, former project director of the Enterprise for the Environment at the Center for Strategic and International Studies. The following is excerpted from this paper, with the author's permission:¹

Report Summaries

The “next generation” reports listed below by no means present identical recommendations. Each is unique in its scope and emphasis, and each has a certain flavor reflecting the composition of its authorship, and whether the report was the output of an expert panel or a stakeholder process:⁴

- *Setting Priorities, Getting Results: A New Direction for EPA*, National Academy of Public Administration (NAPA).⁵ This report stemmed from EPA’s FY 1994 appropriations bill which directed the agency to engage NAPA to review EPA’s processes for priority setting and resource allocation, organizational structure, and relationships with states and communities.
- *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*, President’s Council on Sustainable Development. President Clinton created the PCSD in 1993 and charged it with producing consensus recommendations on how to pursue sustainable development. The original Council had 25 members made up of cabinet heads and leaders from business, environmental, civil rights, labor, and Native American organizations. A wide range of issues is addressed in *Sustainable America*, and many are relevant to the environmental protection framework. The PCSD’s report is notable particularly for the fact that it is a consensus document endorsed by four major national environmental NGOs.⁶
- *The Alternative Path: A Cleaner, Cheaper Way to Protect and Enhance the Environment*.⁷ This report reflected a two-year-long stakeholder process, but not a formal consensus-building effort. The report sets forth broad principles constituting a foundation for a new system of environmental protection, and also a number of more focused recommendations on an “alternative path” of regulation intended to experiment with more performance-based, flexible approaches to reducing pollution.
- *Resolving the Paradox: EPA and the States Focus on Results*. NAPA.⁸ Like the earlier volume, this report resulted from a directive by Congress; in this case, to review key initiatives in federal, state, and local environmental protection, and examine the responses by EPA and the Congress to the 1995 NAPA report.
- *Thinking Ecologically*. Next Generation Project at the Yale Center for Environmental Law and Policy.⁹ This project brought together a number of experts writing on the common theme of charting a new course for environmental policy; the project took input and comment from some 250 people over two years in a series of workshops and conferences.
- *The Environmental Protection System in Transition: Toward a More Desirable Future*,¹⁰ the Enterprise for the Environment. Its final report, entitled E4E, was an explicit, consensus-building project involving over 80 participants including: a bi-partisan group of members of Congress, state and local government officials, and former EPA administrators; the current deputy administrator of EPA; and leaders from business, the environmental community, and academic and research institutions. As a consensus process, E4E was notable particularly in its bipartisan composition and its involvement of all levels of government, though several participants chose not to endorse the final report.¹¹

There are many convergent themes in the reports, as discussed in the sections below.

The Environmental Protection System, Past and Future

- All of the reports recognize that the current system has brought about a much cleaner environment over the past three decades, largely through application of technology-based regulations¹² on large point sources of pollution and through national standards applicable to various products, processes, and substances.
- At the same time, the reports argue that the current system is not well-equipped to address the environmental challenges that remain or that loom on the horizon.
- Several of the reports describe the current system as likely being in a zone of “diminishing returns,” where further tightening of technology-based regulations will produce modest environmental improvement at very high cost.¹³
- The reports call for evolution, not revolution. None of the reports call for a dismantling of the current regulatory system; they recommend building on it. The reports recommend modifying and supplementing the existing system, experimenting with new approaches, and carefully evaluating the results. In E4E, the metaphor for this evolution was the use of “stepping stones” to cross a river. The E4E report stated that this evolution would require “experimentation, prudent risk taking, mistakes, learning, adaptation, and a rebuilding of trust.”¹⁴ In a similar vein, The Aspen Institute

concluded, “The Alternative Path supplements the current regulatory system rather than replacing it. The current system is needed to serve as a benchmark for performance as new methods are tested.”¹⁵

Goals

- Most next generation reports emphasize the need for the nation to set clear, measurable environmental goals to guide the environmental protection system.¹⁶ The PCSD set forth 10 interrelated goals that it felt were essential in guiding the nation toward sustainable development, and it offered suggestions of indicators to measure progress toward each goal.¹⁷ One of the Aspen Institute’s 11 broad, underlying principles developed in *The Alternative Path* is: “Environmental protection goals should underlie a new system and be clear and measurable.”¹⁸ E4E’s vision for the future recommended that an improved environmental protection system “set and pursue clear environmental goals and milestones for the nation, states, localities, and tribes, and use understandable indicators to measure progress.”¹⁹
- None of the next generation reports suggest that environmental goals (or milestones) obviate the need for regulations or nonregulatory policy tools to bring about reductions in pollution or other changes necessary to protect the environment.

Information and Data

- Next generation reports stress the need for greatly improved information and data systems.²⁰ Information and data relevant to the environmental protection system encompass those related to ambient conditions, emission sources, and risks to human health and ecosystems, as well as measures of Agency resource use and impacts, and broader social and economic impacts.
- The improved environmental protection system called for in next generation reports requires better information and data than does the current system. A system focusing on environmental goals as described above requires better monitoring and tracking of environmental conditions and more sophisticated information systems than traditional technology-based regulations.
- The PCSD, E4E, and NAPA reports contain recommendations to strengthen the base of scientific knowledge; increase its use by decision-makers and the general public; and improve the quality, collection, management, and accessibility of environmental information.²¹

Evolution of the Regulatory System

- Next generation reports call for evolutionary change in the regulatory system, with an emphasis on performance-based standards (rather than technology-based standards) and with regulated entities having more flexibility in meeting these standards while maintaining high standards of accountability.²²
- This evolution would also include a more integrated, multimedia regulatory structure; more encouragement of pollution prevention; and more streamlined reporting requirements.
- The PCSD’s conclusion in this area represented a breakthrough: for the first time, a prominent group of national environmental organizations and business leaders jointly endorsed the
...growing consensus that the existing regulatory system may be greatly improved by moving toward performance-based policies that encourage pollution prevention. Regulations that specify performance standards based on strong protection of health and environment — but without mandating the means of compliance — give companies and communities flexibility to find the most cost-effective way to achieve environmental goals. In return for this flexibility, companies can pursue technological innovation that will result in superior environmental protection at far lower costs. But this flexibility must be coupled with accountability and enforcement to ensure that public health and the environment are safeguarded.²³
- Several next generation reports address the thorny issue of “superior environmental performance,” i.e., whether regulators should offer more flexible, cost-saving approaches only if regulated entities provide greater environmental protection than that achieved by current regulations. The conclusions are very similar: superior environmental performance should not be required of each and every improvement to the regulatory system. The PCSD distinguished between general streamlining and improvement of the regulatory system (expected to produce cost savings and/or

incremental environmental improvement), and bold experiments in alternatives to the current system that would require superior environmental performance as a condition for a far greater range of flexibility for the regulated entity.²⁴ This distinction is echoed in *The Alternative Path* and the E4E report.²⁵

- Many next generation reports cited the desirability of regulatory approaches that encouraged pollution prevention across all media.²⁶
- Many reports emphasize the desirability of improving the collection, organization, and dissemination of information to reduce duplication and streamline reporting requirements while enhancing access to relevant information by regulators and the public at large.²⁷

Expanded Set of Policy Tools

Next generation reports call on government to expand the set of policy tools it uses to protect the environment.²⁸ Examples include greater use of:

- Pollution taxes, often discussed in the context of a revenue-neutral tax shift in which taxes on labor and/or capital would be reduced.
- Pricing of various services that reflects their environmental impacts, e.g., transportation and waste disposal.
- Reform of subsidies that encourage environmental degradation.
- Tradable permits, such as the Clean Air Act's sulphur dioxide allowance trading system, the RECLAIM program for controlling air pollution in the Los Angeles air basin, various water effluent trading programs, and land-oriented tradable permits (e.g., wetlands mitigation banking).
- Information disclosure requirements, such as the Toxics Release Inventory and California's Proposition 65.
- Systems of extended product responsibility in which designers, producers, suppliers, users, and disposers accept responsibility for environmental effects through all phases of a product's life.

Federal-State Partnerships

- Several next generation reports address the nature of the federal-state partnership in protecting the environment.
- Next generation reports generally embrace the principle that EPA should differentiate its oversight responsibilities based on a state's environmental performance.²⁹ The PCSD recommended differentiated oversight based on performance: "Federal agencies should develop effective partnerships with state governments to administer environmental regulatory programs. These partnerships should eliminate duplicative activities and greatly reduce federal oversight of state programs that have a proven track record."³⁰

Federal Policy Integration

- Next generation reports emphasize the need for better policy integration at the federal level. The policies of many federal departments and agencies have a significant impact on the environment through their influence on the activities of various sectors of the economy. Consistent with this theme, the PCSD report contains sections addressing many of these sectors.³¹
- Several next generation reports recommend environmental concerns be better integrated into federal agencies through revitalization of the National Environmental Policy Act.³² E4E also cited the need for stronger coordination among agencies in dealing with problems ranging from water quality to endangered species to climate change, and argued that responsibility for this ultimately lies with the President who can choose to empower the Council on Environmental Quality or another White House office to perform the leadership and coordination function.³³
- Several reports call on Congress to better integrate its fragmented committee structure to improve both its legislative and oversight functions in the area of environmental protection.³⁴

Other Themes in Next Generation Reports

Several next generation reports emphasize the key role of private sector stewardship in protecting the environment. The

Council recommends adoption of a voluntary system that ensures responsibility for a product's environmental effects by all firms involved in the product's life-cycle.³⁵ The E4E report contains recommendations including: development and better metrics and indicators for stewardship; more extensive private networks of information sharing on pollution prevention and environmental stewardship; and industry adoption of a set of environmental best practices that promote both environmental protection and improved profitability.³⁶

CONCLUSION

Industrial ecologists recognize that environmental protection in the coming century will require systemic changes in materials use, production processes, product formulation, product use, and disposal practices:

Environmental regulatory processes and regulations have defined and expanded the demand for technology-based products and services related to the environment. Nevertheless, most critical barriers to environmentally beneficial technology innovation and diffusion arise within the U.S. environmental management system.

NOTES

1. Karl Hausker, *The Convergence of Ideas on Improving the Environmental Protection System* (Washington, DC: Center for Strategic and International Studies, 1999).
2. See, e.g., *Final Consensus Report of the National Commission on Superfund* (1994) or *Ozone Transport Assessment Group Executive Report* (1997).
3. President's Council on Sustainable Development (PCSD), *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future* (Washington, DC: U.S. Government Printing Office, 1996), pp. 26-27.
4. Typically, and not surprisingly, expert panel reports were able to make more specific and controversial recommendations, while consensus reports are less specific and controversial.
5. NAPA, *Setting Priorities, Getting Results: A New Direction for EPA* (Washington, DC, 1995). Hereinafter, this report is cited as NAPA I.
6. These were: John Adams (Natural Resources Defense Council), Jay Hair (National Wildlife Federation), Fred Krupp (Environmental Defense Fund), and Michele Perrault (Sierra Club).
7. The Aspen Institute, *The Alternative Path: A Cleaner, Cheaper Way to Protect and Enhance the Environment*, Aspen Series on the Environment in the 21st Century (Washington, DC, 1996).
8. NAPA, *Resolving the Paradox: EPA and the States Focus on Results* (Washington, DC, 1997). Hereinafter, this report is cited as NAPA II.
9. Next Generation Project, *Thinking Ecologically* (New Haven: Yale Center for Environmental Law and Policy, 1997).
10. E4E, *The Environmental Protection System in Transition: Toward a More Desirable Future*, 1998, <<<http://www.csis.org/e4e/>>>. E4E was convened and chaired by William D. Ruckelshaus, who twice served as the administrator of EPA. The Center for Strategic and International Studies provided an institutional home for the project and analytic support, and The Keystone Center provided process design and facilitation services. At the direction of Congress, NAPA provided additional analytic support to E4E and developed its own report on the U.S. environmental protection system (NAPA II).
11. These several participants, and their reasons for not signing, are described in David Clarke, What Went Right, *Envtl. F.*, March/April 1998. See also Linda Greer, Why We Didn't Sign, *Envtl. F.*, March/April 1998, pp. 37-38.
12. This dialogue uses "technology-based regulation" interchangeably with "command-and-control regulation" (as do most authors), and distinguishes it from "performance-based regulation" and other policy tools in the pages that follow.
13. See, e.g., The Presidential/Congressional Commission on Risk Assessment and Risk Management (the Risk Commission) Washington, DC: U.S. Government Printing Office, 1997) p. 31; and Daniel C. Esty and Marian R. Chertow, Thinking Ecologically: An Introduction, in Next Generation Project, *Thinking Ecologically*, p. 6.
14. E4E, *Environmental Protection System in Transition*, p. 5. ¶15. Aspen, *Alternative Path*, p. 10. ¶16. See, e.g., Risk Commission Report, pp. 4 and 14; and NAPA II, pp. 39-46.
17. PCSD, *Sustainable America*, pp. 12-23.
18. Aspen, *Alternative Path*, p. 5.
19. E4E, *Environmental Protection System in Transition*, p. 4.

20. See, e.g., Aspen, *Alternative Path*, pp. 5-7 and 16; Risk Commission Report, pp. 23-28 and 45-48. Also, in Next Generation Project, *Thinking Ecologically*, see Jane Coppock and John Gordon, Ecosystem Management and Economic Development, p. 40; Jason Rylander and John Turner, Land Use: The Forgotten Agenda, p. 69; E. Donald Elliott, Towards Ecological Law and Policy, p. 176; and Emil Frankel, Coexisting With the Car, p. 193.
21. PCSD, *Sustainable America*, pp. 57-68; E4E, *Environmental Protection System in Transition*, pp. 19-24; and NAPA II, pp. 53-56 and 68.
22. The degree to which current regulations are performance-based versus technology-based is subject to endless debate. For one of most lucid discussions of this issue concluding that, in practice, technology-based standards do predominate, see NAPA I, pp. 91-92.
23. PCSD, *Sustainable America*, p. 28.
24. Compare policy recommendations in PCSD, *Sustainable America*, pp. 31 and 34, with those at p. 35, the latter of which involve superior environmental performance.
25. Aspen, *Alternative Path*, pp. 10 and 13; and E4E, *Environmental Protection System in Transition*, pp. 29-30.
26. See, e.g., PCSD, *Sustainable America*, pp. 26-27; E4E, *Environmental Protection System in Transition*, p.27; and Marian R. Chertow and Charles W. Powers, Industrial Ecology: Overcoming Policy Fragmentation, in Next Generation Project, *Thinking Ecologically*, pp. 19-36.
27. PCSD, *Sustainable America*, p. 60; NAPA II, p. 68; E4E, *Environmental Protection System in Transition*, pp. 21-23; National Environmental Policy Institute (NEPI), *Integrating Environmental Policy: A Blue Print for the 21st Century* (Washington, DC: NEPI, 1996). *Integrating Environmental Policy: A Blueprint for 21st Century*.
28. See, e.g., NAPA I, pp.103-04; PCSD, *Sustainable America*, p. 27; Aspen, *Alternative Path*, p. 5; Risk Commission Report, pp. 29-31; NAPA II, p. 37; Robert Stavins and Bradley Whitehead, Market-Based Environmental Policies, in Next Generation Project, *Thinking Ecologically*, pp. 105-17; E. Donald Elliott, Towards Ecological Law and Policy, in Next Generation Project, *Thinking Ecologically*, pp. 179-86; E4E, *Environmental Protection System in Transition*, pp. 23-24 and 34-40; and NEPI, NEPI, *Reinventing the Vehicle for Environmental Management* (Washington, DC: NEPI, 1995), pp 45-48.
29. See, e.g., E4E, *Environmental Protection System in Transition*, pp. 41-44; and NEPI, *Building Partnerships for Accountable Devolution* (Washington, DC: NEPI, 1997)
30. PCSD, *Sustainable America*, p. 53.
31. See, e.g., PCSD, *Sustainable America*, pp. 33, 37, 49, 54, and 125-29.
32. See, e.g., Risk Commission Report, p. 52; Marian R. Chertow and Charles W. Powers, Industrial Ecology: Overcoming Policy Fragmentation, in Next Generation Project, *Thinking Ecologically*, p. 33, footnote 3; and E4E, *Environmental Protection System in Transition*, pp. 45-47.
33. E4E, *Environmental Protection System in Transition*, p. 47.
34. NAPA I, p. 132; NAPA II, p. 74; and E4E, *Environmental Protection System in Transition*, pp. 48-49.
35. PCSD, *Sustainable America*, pp. 38-44.
36. E4E, *Environmental Protection System in Transition*, pp. 51-60.
37. Robert A. Frosch, The Industrial Ecology of the 21st Century, *Scientific American*, September 1995: 178, 181.
38. David R. Berg and Grant Ferrier, *The U.S. Environmental Industry* (Washington, DC: U.S. Department of Commerce, 1998) p. 73.

APPENDIX C

METROPOLITAN AND RURAL STRATEGIES

C-1. EXAMPLES OF SUSTAINABLE COMMUNITY INITIATIVES

Several hundred community efforts around the country are working on important fronts in sustainable community development. Through sheer initiative and fortitude, many communities are already realizing the benefits of sustainable community development. Although this is a locally driven process, the goals and objectives of communities in metropolitan and rural areas can be enabled and supported at many different scales — neighborhood, local city, regional, state, national, and global. We include these examples here to demonstrate some of the many different elements of sustainable community development.

Neighborhood

- **Austin's Casa Verde Builders.** Located in Austin, Texas, Casa Verde Builders is a program organized by the American Institute for Learning, the U.S. Department of Housing and Urban Development (HUD), YouthBuild, AmeriCorps, the city of Austin, the U.S. Department of Energy (DOE), and the State Energy Conservation Office. In this program, at-risk youth learn hands-on construction skills and applied academics by building energy-efficient, sustainable, and affordable housing in low-income neighborhoods. Casa Verde homes are at least 35 percent more energy efficient than traditionally built affordable housing. Casa Verde Builders also perform other community service activities, such as weatherization and disability access remodeling. The proceeds from home sales and remodeling go back into the program to ensure that other young people and families can benefit. As of 1995, the program's 64 members have built 12 1,400-square-foot homes.
- **Savannah's Grants for Blocks.** After noticing a falling off in local citizen participation in city-run neighborhood improvement programs, the city of Savannah decided to surrender control of improvement money to residents. The city's Grants to Blocks program gives residents money — up to \$500 — to improve their neighborhoods. From 1993 to 1997, residents completed more than 700 beautification projects, and over 1,500 local individuals attended training workshops on community building or leadership development. Resident and city staff together conducted visioning sessions. City government supported the process by targeting services and improving the infrastructure. Citizens increased their citizenship responsibilities. Financial institutions increased their investments in inner city neighborhoods once they perceived that risks were reduced.

Local City, Town, or Village

- **Young's Bay, Washington.** Salmon are a bellwether of ecological health in the Pacific Northwest. Shorebank Pacific, a nonprofit affiliate of a bank holding company, has lent \$5 million to 50 high-risk projects, 70 percent of them in the lower Columbia and Willapa watersheds to help preserve and recover the salmon runs in these rivers. Each of these projects is designed to change the interactions among natural systems, markets, and communities. For example, the bank has worked with a group of individual gill-net salmon fishers in Young's Bay at the mouth of the Columbia River. These fishers are also taking steps to protect the salmon habitat. Through one of its client companies, Shorebank purchased about 50 percent of the catch in Young's Bay and brought it to high-end markets in Seattle, Portland, and San Francisco, serving as a critical intermediary for the gill-netters to ensure that their efforts to protect salmon habitat are recognized in the market price paid for the fish.
- **Philadelphia.** For more than 50 years, Cardone Industries has pioneered the automotive parts remanufacturing industry in Philadelphia. Cardone employs 3,500 people in Philadelphia, many of whom come from the inner city and can walk to work. As a remanufacturer, Cardone Industries is not only making a major contribution in terms of materials, energy, labor, and capital equipment conservation, but also, by restoring worn or nonfunctioning products to like-new condition, it prolongs the lifetime of automotive components. It preserves the value embodied in products during their

manufacture, making it possible for automobile owners to acquire replacement parts at reasonable prices and to keep their vehicles in better condition over longer lifetimes.

Regional

- Florida Eastward Ho! Initiative. As part of a major effort to save the Everglades ecosystem, the Eastward Ho! Initiative created a joint state-local effort to revitalize an 85-mile-long urban corridor stretching from West Palm Beach to Miami by encouraging infill and redevelopment of lands not adjacent to the Everglades watershed. The effort has been successful in large part because of the collaboration of federal, state, and local natural resource agencies. The ultimate goal is to create sustainable communities in Southeast Florida “by accommodating new residents, maintaining unique local character, revitalizing the urban core, protecting the water supply, ecosystems, and quality of life, and making increasing cultural diversity a strength,” according to researcher Julia Parzen.
- New York Watershed. Faced with investing \$7 billion in conventional water treatment technology to correct for the agricultural contamination of its upstate watershed, New York City instead formed a partnership with the watershed’s farmers to improve their agricultural practices and to purchase upstate farmland at a cost of \$1 billion. In this win-win solution facilitated by a “smart rules” set of regulatory incentives through a network of federal and state agencies, New York City avoided \$6 billion in unnecessary capital investment, and upstate farming communities gained access to new capital.
- Information and Technical Assistance in Montana. Prior to 1994, residents in eastern rural Montana travelled 225 miles to the nearest metropolitan area of Billings, Montana, to get specialized health care. Thanks to interactive television, fiber optics, and some federal assistance to the Eastern Montana Telemedicine Network (EMTN), five rural medicine facilities are connected to physicians in Billings. EMTN also is connecting rural high schools to provide advanced and continuing education courses to nurses and others through distance learning.

State

- Maryland Smart Growth Program. This program reflects the state of Maryland’s determination that public development dollars are most wisely spent when they are targeted to “priority funding areas.” These are locally defined and state-certified areas where growth is planned, infrastructure is already in place, and criteria established by the Smart Growth and Neighborhood Conservation Act are met. By investing funds only in these areas, the state expects to save taxpayer dollars, protect open space from sprawl development, preserve its heritage, and encourage reinvestment in older communities. The Maryland Office of Planning provides analytical tools and technical assistance to help counties define their priority funding areas. The program does not prohibit development in nonpriority areas, but does prohibit the use of state development dollars for such projects. In addition to this geographic targeting of state funds, Maryland has adopted several programs specifically designed to support projects that implement smart growth. Examples include the Rural Legacy Program, the Neighborhood Business Development Program, Live Near Your Work, the Neighborhood Partnership Program, and the establishment of the Revitalization Center in Baltimore City.
- New Jersey State Development and Redevelopment Plan. The New Jersey State Development Commission works to integrate state and local planning to conserve natural resources, revitalize urban centers, protect the environment, and provide affordable housing and services to communities. New Jersey voters in 43 cities and six counties decided to raise their taxes to buy and preserve open space in the November 1998 election. Statewide, by a two-to-one margin, voters also approved spending nearly \$1 billion over 10 years to buy half of New Jersey’s remaining open space.
- Oregon Statewide Planning Program. Oregon has a program dating from 1973 to save farm and forest lands, manage urban growth, and protect natural resources. Most recently, the governor established “quality development objectives” to guide state agency programs and investments. The objectives include reducing urban sprawl, producing mixed development, encouraging choices of energy-efficient transportation, providing cost-effective public services, protecting the environment, and creating a balance of jobs and affordable housing.

National

- Brownfields Initiative. The Brownfields Initiative supports local efforts to clean up and redevelop brownfields — prop-

erties where reuse is complicated by real or perceived environmental contamination. The Brownfields Initiative has provided grants to more than 200 communities and technical support to hundreds more. Through the Brownfields National Partnership, created in 1997, more than 20 federal agencies work together to provide financial and technical support for brownfields revitalization activities. The partnership’s centerpieces are 16 Brownfields Showcase Communities, models of multi-agency collaboration including both major metropolitan areas and small towns. In 1997, the President signed into law a \$1.5 billion brownfields tax incentive for the cleanup and redevelopment of brownfields.

- Transportation Equity Act for the 21st Century (TEA-21). TEA-21 guarantees \$198 billion to support intermodal transportation. The act builds on the Intermodal Surface Transportation and Efficiency Act (ISTEA) of 1991, which emphasized inclusive planning and decisionmaking, flexible funding, and integration of transportation with land use and environmental concerns. Communities all over the country have taken advantage of this flexibility. Over the life of ISTEA (Fiscal Years 1992-97), more than \$2.4 billion in what used to be highway money was reprogrammed and obligated for public transportation projects.
- National Associations and Networks. Many associations have begun to educate their members on the options and benefits of sustainable development. The Joint Center for Sustainable Communities, a partnership between the U.S. Conference of Mayors and the National Association of Counties, with the funding support of several federal agencies, provides education and technical assistance and information about the nation’s best sustainable practices to city and county officials. Most importantly, the center identifies ways that cities and counties can work together. The Smart Growth Network, supported by the U.S. Environmental Protection Agency, the International City/County Management Association and others, serves as an invaluable resource on smart growth to counter the negative impacts of sprawl and community disinvestment. The Sustainable Communities Network, formed by a coalition of nonprofits, is a vast, growing resource of Website links, topical gateways, case studies, bibliographies, and appendices for use by local communities.
- The National Coastal Zone Management (CZM) Program. The CZM Program is a model voluntary partnership between the federal government and U.S. coastal states with federal funding levels for 1997 through 1999 of \$50 million annually. It is designed to: (1) encourage the participation, cooperation, and coordination of the public and federal, state, local, interstate, and regional agencies and governments affecting the coastal zone; (2) preserve, protect, develop, and — where possible — restore and enhance the resources of the nation’s coastal zone for this and succeeding generations; and (3) help states promote wise use of land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and aesthetic values as well as the needs for compatible economic development. Since 1974, a total of 27 coastal states and five island territories have developed CZM programs. Together, these programs protect more than 99 percent of the nation’s 95,000 miles of coastline.

Global

- The International Council for Local Environmental Initiatives’ (ICLEI) Cities for Climate Protection Campaign. ICLEI was instrumental in the adoption of Local Agenda 21 at the Earth Summit. Agenda 21 identifies specific objectives that can be used to guide sustainable development efforts. Since then, the U.S. branch of ICLEI has helped local governments assume a major role in sustainability efforts and has developed “one-stop” guides on technical assistance and funding sources, and other references. ICLEI has calculated that if all 55 cities and municipalities participating in its Cities for Climate Protection Campaign meet their voluntary goals, their emissions reductions will be equivalent to 10 percent of the U.S. obligation under the Kyoto Protocol.

C-2. TAILORING THE TOOLS TO ADVANCE STRATEGIC AREAS OF SUSTAINABLE COMMUNITY DEVELOPMENT

From our review of many inspiring efforts and activities, the Council identified five strategic opportunity areas of sustainable

community development and three tools to overcome obstacles on the path to local sustainability. The following tables show how the tools of information and technical assistance, economic incentives and financial assistance, and local capacity and partnerships can be used to support the five strategic areas: green infrastructure, land use and development, community revitalization and reinvestment, rural community and enterprise development, and materials reuse and resource efficiency. They also identify a preliminary list of financial and technical intermediaries that can advance progress in each of these five areas.

Green Infrastructure

Goal: Promote place-based approaches to conserve, protect, restore, and manage local and regional networks of natural, living, and environmental resources and amenities.

Objectives: To establish a long-term strategy to plan for, conserve, protect, and restore a network of natural and environmental resources and amenities (open space, farms, timberlands, green corridors, wildlife habitat, parks, brownfield restorations, landscaping of development parcels, backyards, etc.) that will provide an attractive and functionally useful setting for future development; to encourage “win-win” approaches for conservation and development; and to promote community-initiated place-based approaches to land use and growth that combine the concepts of ecosystem management with new economic and community dynamics (e.g., “human ecology”).

Tools	Actions
<i>Information</i>	<ul style="list-style-type: none">• Link green infrastructure into national public marketing campaigns on quality of life, sustainable communities, and smart growth issues• Use geographic information system to demonstrate how green infrastructure planning can be used with “buildout” analysis to determine how to avoid growth conflicts, regenerate vacant inner city areas, and promote voluntary conservation and revitalization actions• Convene a green infrastructure forum to bring practitioners together to gain a deeper and more complete understanding of successful community approaches to green infrastructure• Use partnerships between practitioners to identify collaborative opportunities• Develop and make available a learning toolkit which community leaders can use for implementing sustainable community opportunities for green infrastructure
<i>Economic Mechanisms and Incentives</i>	<ul style="list-style-type: none">• Encourage localities to integrate land conservation, resource management, and green urbanism into economic and community development planning and local jobs and small business creation.• Develop small business opportunities tied to resource use, conservation, restoration and waste reuse, pollution prevention and environmental protection (possible instruments include conservation easements, farmland rental agreements, stream restorations, climate protection zones, rooftop gardens, and urban forests)• Support tradable development rights and other ways to protect farm, forest, and rangeland and encourage stormwater treatment, habitat creation, stream restoration, and landscaping• Target federal, state, and local programs, such as the Conservation Research Program, Forest Legacy Program, the State Revolving Fund, and state open space funds, to leverage additional funding to provide awards, tax breaks, and other incentives to identify, plan, and act
<i>Financial and Technical Intermediaries</i>	<ul style="list-style-type: none">• Smart Growth Network• American Planning Association’s Growing Smart Clearinghouse• Federal, state, and local government, including the Joint Center for Sustainable Communities• Economic development and small business organizations• Research institutes• NGOs (i.e., American Farmland Trust, The Conservation Fund, Land Trust Alliance, American Forests, etc.) and foundations• Urban forestry, agriculture, architectural, engineering, and landscape architecture organizations
<i>Partnerships and Local Capacity</i>	<ul style="list-style-type: none">• Use existing sustainable development leadership organizations to develop a learning toolkit and train local and regional leaders on how to design green infrastructure in a larger community-based green urbanism education strategy in order to foster local job creation and small businesses, provide natural amenities and nonvehicular travel routes (examples include “green gardens” which train minority communities in ecological gardening, The Conservation Fund’s Sustainable Careers Internship Program for young adult training and employment, and the Roedale Institute’s Farm Link program to help new

- farmers get started)
- Reinforce efforts of pro-green infrastructure financial and technical intermediaries
- Link conservation and environmental interests with development interests to foster sustainable community initiatives

Land Use and Development

Goal: Promote smart growth strategies to enhance the livability and sustainability of metropolitan and rural communities.

Objectives: To promote sustainable development patterns to prevent ecological degradation and promote a “sense of place;” to protect farm, forest, and rangelands and open spaces; to reverse abandonment of older, central cities and “inner ring” suburban areas; and to appropriately value vacant and underutilized land and create small businesses and local jobs.

Tools	Actions
<i>Information</i>	<ul style="list-style-type: none"> • Launch national public marketing campaign on smart growth issues • Promote use of geographic information systems to identify most appropriate places for future development, revitalization, or restoration as well as the impacts of growth; GIS mapping efforts could make use of HUD’s Community 2020 software, the National Center for Resource Innovations “Green, More or Less” approach, and the American Planning Association’s current Land-Based Classification System, which documents data on land cover, land use, and property rights • Create or bolster mechanisms for people to gain better information and share successes • Use “buildout” analysis to determine where and how much development will be in the future and to target areas for community conservation and revitalization action and assistance • Develop and encourage the use of analytical methods that regions can use to assess the relationship between investments in growth and investments in poverty reduction • Promote wide distribution of findings from HUD’s Partnership for Advanced Technology in Housing • Promote the adoption of model state legislation developed through HUD’s Growing Smart initiative
<i>Economic Mechanisms and Incentives</i>	<ul style="list-style-type: none"> • Implement demonstrations and pilots of location-efficient mortgages • Support tradable development rights and conservation easements to protect farm, forest, and rangelands • Support local and regional food systems in ways to protect farmland surrounding urban areas to create local jobs and provide quality food for urban and suburban residents • Support air quality credits for sustainable communities • Implement conservation incentives of the 1997 Taxpayer Relief Act • Implement a location policy for federal facilities that supports smart growth • Leverage federal, state, and local programs to provide awards, tax breaks, and other incentives to identify, plan, and act • Support implementation of second round of Empowerment Zones — 15 urban and 5 rural • Strengthen the Farmland Protection Policy Act
<i>Financial and Technical Intermediaries</i>	<ul style="list-style-type: none"> • Smart Growth Network • Joint Center for Sustainable Communities • APA’s Growing Smart Clearinghouse • Federal, state, and local government • Developer associations, such as National Homebuilders Association • Urban Land Institute and other such institutes
<i>Partnerships and Local Capacity</i>	<ul style="list-style-type: none"> • Use civic leadership organizations and programs to help train local and regional leaders on a whole array of techniques relating to sustainability, including smart growth • Reinforce efforts of pro-smart growth financial and technical intermediaries • Provide federal support for local public and private farmland and open space protection initiatives

Community Revitalization and Reinvestment

Goal: Promote methods that build on local and regional economic, ecological, and social assets to reinvigorate and revitalize metropolitan and rural communities.

Objectives: To attract sustainable investment in metropolitan and rural communities; to integrate sustainable concepts into economic and community development activities; and to build strong and diversified local economies while linking them to regional and global markets.

Tools	Actions
<i>Information</i>	<ul style="list-style-type: none"> • Develop and promote methodologies to map local social, environmental, and economic assets (such as local purchasing power, infrastructure) that can recognize local resources and attract reinvestment and revitalization
<i>Economic Mechanisms and Incentives</i>	<ul style="list-style-type: none"> • Implement demonstrations and pilots to assess the impacts of location-efficient mortgages • Identify and promote new market tools for financing reuse of assembled and serviced land (such as financial incentives to clean up and economically develop brownfields) • Develop programs that promote investment in areas with existing rights of way and serviceable transportation and communications infrastructure and outside of green infrastructure • Allow the premature write-off of nonproductive assets to avoid creating stranded investments • Create incentives for businesses that hire and train local people for new sustainable jobs • Support the creation and implementation of individual development accounts in conjunction with the Treasury's EFT-99 initiative • Support the creation of secondary financial markets for community and economic development loans • Ensure that transportation and training programs associated with welfare-to-work are linked to address the spatial mismatch between jobs and housing • Provide incentives to encourage energy efficiency in housing and other community building programs • Provide incentives for public and private partnerships that achieve environmental protection, social equity, and economic prosperity • Implement sustainable communities provisions of TEA-21 • Focus federal financial and technical assistance on new market opportunities and small business creation in distressed urban and rural communities
<i>Financial and Technical Intermediaries</i>	<ul style="list-style-type: none"> • Community reinvestment loan funds • Private sector — firms and finance • Chambers of commerce • Federal, state, and local government agencies • Community development corporations • Foundations
<i>Partnerships and Local Capacity</i>	<ul style="list-style-type: none"> • Convene forums to link private sector with community development agencies on community reinvestment needs and opportunities • Use civic leadership organizations and programs to help train local and regional leaders on a whole array of techniques relating to sustainable community development • Link job training and workforce development to sustainability initiatives • Develop partnership matrices that link federal resources to community initiatives • Promote green building and equity programs that teach young people how to build and maintain energy-efficient and affordable homes

Rural Community and Enterprise Development

Goal: Promote innovative economic enterprises and opportunities that can strengthen and diversify rural economies and promote sustainable community development.

Objectives: To improve rural communities' access to markets, build assets, and facilitate networking opportunities; to develop strategic alliances between rural and urban markets; to promote diversified "mixed-income" strategies that can supplement traditional economic activities, such as farming or resource extraction; and to create nonfarm jobs to support family farms.

Tools	Actions
<i>Information</i>	<ul style="list-style-type: none">• Develop an information and communication infrastructure to encourage electronic and person-to-person communication, mentoring between outside experts and local leaders, and learning about successes• Advance strategic research on the microeconomics of rural enterprise development, particularly in identifying how to overcome barriers to credit• Advance timely research and development of potential markets for rural goods• Deliver education campaigns aimed at urban consumers on rural concerns• Develop more sophisticated technical analyses of sustainable alternatives
<i>Economic Mechanisms and Incentives</i>	<ul style="list-style-type: none">• Identify creative financing to support innovative technologies and techniques• Incorporate planning and diversity requirements in to rural development funding• Enable flexible funding to support sustainable economic alternatives• Integrate or coordinate federal, state, and local programs to enable regional approaches• Implement the recommendations made by the Commission on Small Farms• Promote regional and local food systems as a way for consumers to support local farmers and keep food-buying dollars in their community (such as developing incentives to support community-supported agriculture)
<i>Financial and Technical Intermediaries</i>	<ul style="list-style-type: none">• Regional centers for rural development and regional community and development councils• NGOs and private foundations• Federal agencies (such as Department of Agriculture, Department of Commerce, Small Business Administration)• State and county agencies• Joint Center for Sustainable Communities• Private sector brokers and retailers• National Cooperative Association• Watershed alliances• Natural Rural Partnership• Land-grant universities and other academics
<i>Partnerships and Local Capacity</i>	<ul style="list-style-type: none">• Use civic leadership academies and programs to help train local and regional leaders on rural sustainability• Build the capacity of rural-based NGOs through leadership training• Broker strategic alliances to link rural and urban markets• Convene a workshop to identify elements of success of local and regional food systems• Move farm clubs beyond just "farmer-to-farmer" to involve the entire community• Use local eco-system alliances to highlight urban-rural interdependencies• Support sustainable resource-based industries which support small businesses and coordinate the efforts of federal, state, and county natural resource agencies with community development agencies• Link natural resource-based efforts to community and economic development strategies

Materials Use and Reuse

Goal: Promote strategies that conserve resources and minimize waste by retaining, recycling, reusing, and remanufacturing the embedded material assets found in metropolitan and rural communities.

Objectives: To enable job creation as a result of materials reuse and recycling, particularly in communities that need work; to integrate materials conservation and remanufacturing into federal, state, and local economic and community development; and to promote eco-industrial development to promote resource efficiency and minimize pollution and waste.

Tools	Actions
<i>Information</i>	<ul style="list-style-type: none">• Support feasibility studies of the market for salvaged materials• Develop methodologies that can inventory the nature and value of the built and manufactured assets in a community• Fund marketing efforts to increase public acceptance of reused building materials and remanufactured goods• Fund education efforts to teach architects and contractors about the quality and adaptability of reused materials• Evaluate potential feasibility of deconstruction• Conduct and support research on how costs of disposal of construction and demolition waste affect materials reuse• Conduct and support research on setting aside funding for federally funded demolition projects to promote better materials reuse
<i>Economic Mechanisms and Incentives</i>	<ul style="list-style-type: none">• Support the implementation of deconstruction pilots initiated by public housing agencies• Identify incentives that can enable eco-industrial development to be integrated into regional and local economic planning• Review how the Resource Conservation and Recovery Act can overcome barriers to waste exchange between firms• Review federal, state, and local tax and procurement policies as they relate to encouraging materials reuse or remanufacturing
<i>Financial and Technical Intermediaries</i>	<ul style="list-style-type: none">• Local economic development agencies• Federal, state, and local government• Interagency Working Group on Environmental Technology• DOE's Industries of the Future Initiative• Associations aimed at architects and building contractors• USDA's Forest Products Laboratory
<i>Partnerships and Local capacity</i>	<ul style="list-style-type: none">• Develop a network of "centers of excellence" for materials reuse, remanufacturing, recycling, and eco-industrial development• Train architects and contractors on how to use reused materials• Link job training to materials reuse and remanufacturing programs

APPENDIX D

INTERNATIONAL CAPITAL FLOWS

FORUM ON THE MULTILATERAL AGREEMENT ON INVESTMENT—SUMMARY OF PROCEEDINGS

The Forum on the Multilateral Agreement on Investment (MAI) was convened on February 10, 1998, by the International Task Force of the President's Council on Sustainable Development. Additional personnel associated with the forum are listed in appendix H of this report.

Dianne Dillon-Ridgley, International Task Force Co-Chair

Why Convene an MAI Idea Forum?

The President's Council on Sustainable Development, like other national councils on sustainable development, is paying attention to the Multilateral Agreement on Investment MAI negotiations, as the members have always acknowledged and understood the global nature of sustainability. However, given the enormous challenge of charting a path towards sustainability for our country, our government, and our communities, the Council has primarily focused on domestic issues during its first four years. With the new Executive Order of April 1997, the Council was given an opportunity and a responsibility to make the connection between international issues and their domestic ramifications. The MAI embodies this challenge; moreover, it is precisely in this kind of forum that the Council can be of greatest assistance in convening all stakeholders. The task force is not taking a position on the MAI deliberations, but rather is interested in the potential impact of the MAI on promoting sustainable development.

Jeffrey Hunker, U.S. Department of Commerce

Key Issues

- The MAI brings an important link to the forefront: the investment and environmental agenda.
- There has been a large and growing amount of private capital flows into developing countries in the last 10 years, magnifying the importance of the private sector.
- There has been large domestic economic growth partially due to export growth.
- There is a strong link between overseas investment and U.S. exports.

The two latter points are especially significant due to the magnitude of investment in energy infrastructure at present and in the future — 90 percent of the energy structure in India and China has yet to be built. This can be seen as a blessing or a curse, but certainly renders the MAI important to climate change considerations.

Ambassador Al Larsen, U.S. Department of State

The mandate by Congress to strengthen the rules on international investment carries two concerns:

- Market access is complete and successful, and
- Agreement includes investment protection and provisions for the environment and labor.

These have become a controversial part of the MAI, and the right balance must be sought.

The goals of the environmental provisions are to protect the U.S. ability to enact and enforce its own environmental protection laws, and to foster solid environmental standards in developing countries that balance economic and environmental goals. The negotiated text contains a provision, similar to an article in NAFTA, that countries cannot lower standards to promote investment. There is a need for binding provisions, not just guidelines. European delegations want commitments to be binding.

Specific Provisions to Address the Environment are Similar to NAFTA

- Recognition that countries have the ability to improve environmental laws and existing standards;
- Language “in like circumstances” — look into cases to determine like circumstances to prevent discrimination (e.g., zoning issues are case specific); and
- Language should underscore countries’ ability to speak with private entities about their environmental regulations and management systems.

Other Important Provisions

The Organization for Economic Cooperation and Development (OECD) has done a lot of environmental work in recent years, creating provisions on hazardous waste and principles of environmental decisionmaking. All countries that sign the MAI should be obligated to the same principles and laws agreed to by OECD countries. The MAI should include non-OECD countries in the OECD Environmental Policy Committee Review of principles. Regarding labor concerns, we should create investment incentives to impose discipline on governments at the local, state, and national levels to lure investment that is too costly or that lowers worker standards. The federal government is not in a position to impose limits on states. However, there is a need to gather data on how state governments currently subsidize foreign investment.

Conclusion

OECD provides interesting venues and should continue to solicit advice for integrating sustainable development principles into the private sector.

John Audley, National Wildlife Federation

Three Main Reasons that the National Wildlife Federation (NWF) is Involved in the MAI Discussion

1. The desire to balance economic and environmental rules of law.
2. The relationship to the democratic decision-making process.
3. The implications for its partners in the developing nations of Latin America.

Three Points of Contention With the MAI

1. Direct and indirect expropriations run contrary to U.S. “takings laws.”
2. Dispute proceedings provisions do not embody a democratic process of negotiations, the text targets non-OECD nations, preventing decisions being made at the state or local level.
3. Doesn’t meet the OECD test to balance environmental and economic goals:
 - The MAI permits disputes over just compensation for government takings of private property.
 - The dispute process occurs in front of a panel, not in the state or country where the dispute occurred.
 - There is no recourse for citizens affected by an investment dispute.
 - State and local land rights are shifted to federal rights, which threatens the common homeowner in conflict with the wealthy landowner.
 - It imposes unfair financial burdens on municipal entities.

Other Issues

Much of the agreement is viewed as being negotiated “in secret.” Contentious elements were decided prior to public pressure to engage nongovernmental organizations in negotiations.

Conclusion

NWF opposes the MAI and will make its opposition public through letters and demonstrations. International rules are vital for what NWF is trying to achieve — a direct connection between rules of law and environmental protection.

Stephen Canner, United States Council for International Business

Presentation Goal

To give an international business community perspective and to clear up misinformation. The key question: Can the MAI and rules for environmental protection coexist?

Some statistics:

- \$300 billion in annual investment flows: The United States is the largest exporter and importer of capital.
- Ninety percent of international investment is in industrialized countries: there has been a slowdown of investment into lesser-developed countries.
- Ninety percent of goods and services that are produced abroad, stay abroad (they are not imported back into the United States).
- Twenty-five percent of U.S. exports occur between U.S. businesses and their counterparts abroad.

What Is MAI All About?

From an economist's perspective, the purpose of the MAI is to grow the economy by growing markets for U.S. goods and services abroad. In the past, growth occurred mostly through trade. Now growth is largely through investment in affiliates and joint ventures. The MAI is about growing markets abroad and making rules to guide this growth.

What Should the Rules Be?

1. Business wants to invest abroad with no barriers to action or discrimination. Investors want to operate under national treatment provisions in trade rules.
2. Business wants to establish an enterprise in an environment that is free from government regulations and standards, or conditions, and to avoid host government mandates or regulations that prevent an investor from operating most efficiently.
3. An investor wants legal assurance of transfer, implying that a host government will be bound to international standards of expropriation with appropriate compensation.
4. An investor should have the right to dispute settlement in cases argued between governments, investors, and governments and investors. This provision is embodied in existing bilateral investment treaties.

How Do Rules to Protect the environment Fit In?

Agenda 21 recognizes that the free flow of capital and trade liberalization are essential for growth and development. The MAI is likely to produce this result.

Addressing Environmental and Labor Arguments Made Against the MAI

- The MAI imposes on state sovereignty.
Response: State laws are grandfathered in.
- The MAI will limit the ability of state/local governments to protect the environment and health.
Response: As long as standards are set in a nondiscriminatory way, there is nothing in the MAI that precludes a state's ability to protect itself. The MAI only applies to monetary damages.
- Countries that impose regulation that reduces corporate profits can be seen as a "takings."
Response: The MAI will not give foreign government more rights.

Antonio Parra, World Bank

The International Center for Settlement of Investment Disputes (ICSID) arbitrates settlements among parties of the ICSID Convention. Existing bilateral investment treaties and multilateral treaties include agreements over disputes similar to the MAI. Arbitration of investor-state settlements will take precedence over state-state settlements. The MAI implies several methods of arbitration and recourse to local courts, and allows aggrieved investors to specify form of arbitration. The treaty should offer access to less specialized forms of arbitration, institutional forms of arbitration, and fewer jurisdictional constraints. Different forms of arbitration have different procedural rules. Disputes over similar issues have diverse outcomes with different forms of arbitration. The MAI seeks to bring together arbitration and common provisions on remedies that arbitrators can grant in order to prevent this problem.

David Schorr, World Wildlife Fund

The MAI deals with investor rights and obligations — the importance of this issue is how capital flows have a significant impact on the environment. The World Wildlife Fund poses these key questions: What is appropriate and possible under the MAI, from the standpoint of environmental inclusion in investor protection treaties? Are these issues separate? Can one protect both the environment and investors?

- Good environmental policies are good economic policies.
- Mission: to alleviate bad environmental management in the context of investment.
- Obligations of investors: There is a fine line between private actors and public, as private actors make policy through their actions. How does voluntary compliance as another method of protection besides “command and control” fit in?
- There are three pillars of good environmental governance:
 1. Good standards.
 2. Access to environmental information.
 3. Access to justice — people can apply information to language and enforce standards.

Information Issues: General Principles

- Private entities providing information: Classic tools applied to the government, such as environmental impact statements, should also be applied to private actors. The MAI could include this.
- Toxic release inventories: U.S. laws require corporations to release this information.
- Quality of information: Ensure that information is in a useful and accessible form.
- There should be corporate transparencies across boundaries to see who shareholders are, ensure FCC compliance, apply ISO 14000 (an environmental management certification system), move beyond compliance.

Access to Justice Issues

- The MAI creates access to justice and addresses the need for ICSID to save dispute settlement from developing countries’ local lack of government. However, it must equally ensure individuals’ right to relief and citizens’ ability to have access to justice.
- Relevance of NAFTA: It is important to set up international environmental justice so that citizens have a right to bring complaints to an international body, and corporations are held accountable.
- One way to create citizens’ rights is to give citizens of one country standing rights in another country where the corporation is based, in effect extending jurisdictional limits.
- Adherence to corporation codes and OECD guidelines should be reviewed and a certification system added, so that if a company doesn’t meet a “beyond compliance” standard, the company will not participate in dispute settlement.

RESPONSE BY AMBASSADOR LARSEN TO PANEL PRESENTATIONS

- Takings: This is unnecessary in a U.S. context because of our strong constitutional tradition, but could be issue for our country in other countries. The State Department wants to ensure that governmental action affecting corporate profit is not considered to be a “taking.”
- Relationship between dispute settlement and state and local governments: The corporation, having the same rights as domestic corporations, challenges state law as incompatible with treaty obligations. A state cannot deal with those cases, the federal government would become the defendant in such cases.
- Interest from other countries that want to be a part of the agreement: This is a good opportunity to get more countries to have high standards for investment, the environment, and worker protection.
- Access to justice: The State Department is open to additional approaches on provision of information and access. There is a good case to be made to allow consideration of amicus briefs, and a role for private parties to voice their agreement.
- Good ideas: Getting countries to sign on to OECD environmental standards and an environmental impact statement approach.

Conclusion

There is a need to discuss the balance of concerns that brings a consensus. The State Department negotiators have received

a lot of mail criticizing the MAI and requesting an immediate end to negotiations. All sides were negligent in not opening a dialogue at an earlier stage. Public response, labor attacks, provide impetus for the PCSD to turn the discussion to how to move globalization forward, incorporating the aspects currently missing. Thanked the International Task Force for convening a dialogue focusing on the democratic process and how to set up a global process for responsible international investing.

FORUM ON THE CLEAN DEVELOPMENT MECHANISM AND SUSTAINABLE DEVELOPMENT—SUMMARY OF PROCEEDINGS

The Forum on the Clean Development Mechanism was convened on July 27, 1998, by the International Task Force of the President's Council on Sustainable Development in cooperation with the Alliance to Save Energy, Business Council for Sustainable Energy, Edison Electric Institute, International Climate Change Partnership, and the United States Council for International Business. Additional personnel associated with the forum are listed in appendix H of this report.

Martin Spitzer, PCSD, provided an overview of Council's work and challenged the participants at the forum to identify policies that mitigate greenhouse gas emissions while simultaneously promoting sustainable development.

Dianne Dillon-Ridgley, PCSD International Task Force co-chair, mentioned current areas of task force work: to support and interact with other national councils on sustainable development, to examine international capital flows in light of sustainable development, and to recommend policies that encourage investment abroad consistent with the principles of sustainable development. She noted that the purpose of the forum was to further dialogue and understanding, not to try to reach consensus. The Clean Development Mechanism (CDM) has the potential to contribute to the achievement of sustainable development goals while meeting climate objectives and creating partnerships between developing countries, industrialized countries, and private entities.

Introduction

Melinda Kimble, U.S. Department of State, emphasized to participants that in light of the somewhat difficult history of the climate change regime, focusing on one aspect of the Kyoto Protocol, the CDM, is important. The CDM will be seminal if implemented because it would frame a clearinghouse structure to promote private participation in technology transfer, and because it promotes sustainable development and "leapfrog technologies" in less developed countries while reducing atmospheric levels of greenhouse gases.

Activities that sequester carbon as well as those that reduce emissions must be part of the package. The process of developing mechanisms for sinks projects is taking longer than projected. "Getting the CDM right" is very important, since it will provide the key to domestic and international efforts to mitigate the negative impacts of climate change. In the coming years, policy-makers must work towards:

- Ensuring that benefits of mitigating greenhouse gas emissions are real and lasting;
- Ensuring transparency, efficiency, and accountability;
- Identifying organizations to work on certification, marketing reductions, and finding project funding;
- Administering adaptation funds; and
- Determining the CDM Executive Board membership.

David Sandalow, White House Council on Environmental Quality and National Security Council, spoke on the potential of the CDM to promote sustainable development, reduce greenhouse gas emissions, help developing countries adapt to climate change, and promote U.S. business opportunities abroad. He pointed out two key issues with the CDM thus far: lack of agreement regarding operational entities, and the problem of additionality.

Panel 1: Opportunities and Benefits

Robert Dixon, Director of U.S. Initiative on Joint Implementation (USIJI), presented USIJI's goal: to encourage the development of international voluntary joint implementation projects that reduce or sequester greenhouse gas emissions under the UN Framework Convention on Climate Change (FCCC) Activities Implemented Jointly pilot. USIJI has established operational modalities and nine primary criteria for these projects, including acceptance by the host country and the long-term reduction of greenhouse gas emissions. These projects are primarily energy-efficiency, renewable energy, and forest management activities; and open the door for U.S. businesses to help meet the financial and technological needs of developing countries while protecting the global environment. Additional financial assistance will be catalyzed by emissions reduction credits, but no crediting is allowed under the FCCC pilot. Lessons learned from the USIJI experience could be a useful tool in the development of the CDM.

Mark Hall, Trigen Energy Corporation, gave one industry's perspective of the CDM. Some projects that may qualify as CDM projects are: utility infrastructure, manufacturing process modifications, transportation infrastructure and carbon sequestration. He promoted combined heat and power as a more efficient means of providing power, but warned that all technologies are not suited to every area due to fuel availability and resource constraints. He cited some opportunities and benefits of the CDM:

- It improves the value of the overall investment.
- It may allow for shorter contracts or riskier projects to move forward.
- It encourages multinational corporations and others to look at emissions reduction opportunities globally rather than only in industrialized nations.

Espen Rønneberg, Marshall Islands Delegation and the Association of Small Island States (AOSIS), gave a perspective from a developing country vulnerable to climate change and clearly set out AOSIS's priorities. AOSIS believes that small island developing states will benefit from adaptation fees and cleaner development resulting from the CDM. However, the focus must remain on mitigation from industrialized states rather than on forestry or "sinks" projects of questionable effectiveness in developing states.

A discussion of actions and efforts reasonably expected from developing countries must occur in the context of the priorities of poverty eradication and sustainable development as well as of the threats posed by climate change. The CDM must first tackle industrial sectors and other large sectors of greenhouse gas emissions from developing countries. It is in the interest of AOSIS and other developing countries to use the avenues created by the FCCC to promote sustainable development through efforts such as renewable energy. Other issues of importance are compliance, verification, financial and environmental additionality, and reporting.

Margo Burnham, The Nature Conservancy, outlined The Conservancy's Noel Kempff Climate Action Project in Eastern Bolivia's Noel Kempff Mercado National Park. Project objectives include ensuring the integrity of biodiversity and carbon offsets, investing in long-term funding mechanisms, and conducting rigorous carbon monitoring and verification. Benefits from the project include:

- Investor participation in policy development to stimulate learning from their experience;
- National priorities and government offset sharing,
- Working with communities to improve the standard of living, and
- Access to parkland for sustainable economic enterprises.

Although not a complete solution to climate change, forestry projects such as the Noel Kempff effort can be an important component of the response.

Nancy Kete, World Resources Institute, pointed out the wide agreement in evidence among the other presentations except with regard to "sinks." The main dilemma with the CDM is that no one knows how big the opportunities are; there is not even an order of magnitude estimate of how much money is involved. The magnitude of demand for carbon offsets depends upon how much trading there is and what less-developed countries do. The CDM is not a substitute for foreign direct investment, though it would redirect some of that investment. Systemic changes in economic policies and infrastructure investment are needed. Local benefits exist on a community level, while global benefits can be seen in reduced greenhouse gas levels in the atmosphere.

Discussion focused on questions of benchmarks, baselines, details of the Noel Kempff Climate Action Project, discounting, and "sinks."

Panel 2: Key Issues

Jeff Seabright, U.S. Agency for International Development, outlined the key issues, including methodological issues (i.e., baselines, additionality, liability, and transaction costs) and operational issues involving new and existing organizations.

Christiana Figueres, Center for Sustainable Development in the Americas, addressed the inherent tension in the CDM between an emphasis on national priorities and a reduction of emissions at low cost to, and with little interference from, institutions. She cited gaps between priorities of sustainable development and cost, climate change mitigation and economic growth, innovation and experience, credibility and efficiency, and less-developed countries and the industrialized world. To bridge these gaps, participation of the private sector and clearly established national policies are needed. Host national authorities must:

- Ensure convergence with national priorities, sustainable development, technology transfer, and requirements as defined by host countries; and
- Design and implement systems for approval of projects within a country before referral.

Michael Marvin, Business Council for Sustainable Energy, presented goals for Buenos Aires:

- Increase understanding in the South,
- Reduce the mistrust of the North,
- Ensure an aggressive workplan for the FCCC work groups; and
- Guarantee *ex post facto* credit for eligible post-2000 projects.

The CDM must be transparent (without excessive bureaucracy), developed in cooperation with all stakeholders, usable by all, and allow for profit making for the host country and cost reduction for the donor. It should rely on the private and nongovernmental organization sectors as much as possible to reduce the governmental role, develop incrementally to build a knowledge base, establish clear rules on documentation, and create a clear audit trail.

He suggested that the Executive Board advocate for the CDM rather than merely administer it, and the CDM should supplement, rather than supplant, other development assistance.

John Novak, Edison Electric Institute, presented several suggestions to get the CDM operational in 2000. He outlined three ways the CDM can be used: a non-Annex I party does project and sells emission reductions; a private party partners with a host country to share credits; or CDM investors give funds that the CDM invests and for which they receive credits. Suggestions included drawing on USJI experience; breaking out projects by sector; using a baseline/reference case for greenhouse gas benefits, monitoring, and verification; learning by doing; and adopting a bottom-up approach. Industry should get more involved in the process and help developing countries improve their understanding of the CDM.

Norine Kennedy, United States Council for International Business, presented another business perspective on the CDM. The CDM will meet its goals only if it is widely used. Hence, businesses have to be willing to propose projects that satisfy the concerns of non-Annex I countries, and non-Annex I countries have to be willing to approve those projects. It is important to investigate the impacts of the CDM on competitiveness, trade, investment, and its consistency with open markets and free trade. The four outstanding issues for business are:

- The definition of additionality,
- Share of the proceeds,
- Operating entities and the Executive Board, and
- Limits on the use of certified emissions reduction credits.

Discussion centered on the possible contention between inclusiveness and transparency, negotiations between host countries and Annex I countries, and the CDM's relation to ISO 14000.

Breakout Group Discussion Summary

The following questions were distributed to each breakout group. A summary of the groups' comments follow each question.

1. In General, How Do We Harness or Create Incentives for Participation in Sustainable Energy Development in Developing Countries and Ensure Good Results for Lenders, Investors, and Host Country Stakeholders?

This question proved troublesome from the start due to varying definitions of “sustainable energy development.” Still, some suggestions were:

- Get prices right: global multilateral institutions could use different discount rates for different energy types, thus giving a boost to renewable sources in cost calculations.
- “Cost, risk, and return,” the basic criteria when deciding upon any given investment, are undoubtedly the same criteria a business would use to determine whether to invest in a CDM project. Other factors in this decision would include the enthusiasm of host countries; certainty of receiving a good return (e.g., credits); assignment of responsibility for emissions reductions; and the price of carbon.
- Companies given greenhouse gas emissions reduction targets would likely make a diverse set of investments to reduce their emissions: some plant, process, or equipment investments; some engagement in emissions trading; and investment in a CDM project.
- Governments or institutions could play the role of “market maker” by initially taking on more risk to entice entities to participate. When enough rules and examples are in place, financial intermediaries will take over the markets.
- Monitoring and verification must be able to ensure desired results but not be so stringent as to increase transaction costs and thereby inhibit participation.

2. To Accommodate Complexities and Not Retard the Development of the CDM, Should a CDM Program Be Developed Incrementally or at Once?

Almost all groups agreed that a CDM program should be developed incrementally; otherwise, the process of working out the fine details of the CDM would take too long. The following suggestions were made:

- Business representatives in particular were interested in “learning by doing” and arriving at the best solutions through experience.
- Creating a list of characteristics could help in judging certain projects as “win-win.”
- A mechanism could be created for automatic approval of certain types of projects (e.g., “clear win-win” projects) before the year 2000.
- Some sectors are further along in terms of having projects that are compatible with CDM goals. Those should be permitted before all details are ironed out in all sectors.
- Using provisional rules for early starter projects, and tightening rules later as knowledge is accumulated, is one way to get the CDM operational.
- The private sector would benefit from a compendium of different models to quantify reduction credits so it can find the most suitable model for the sector or project.
- Many participants from the private sector stated that focusing on directing mainstream capital flows in a more “sustainable” direction would be more effective than focusing exclusively on new capital flows.

Varying priorities were evident when trying to determine the most important details to settle within an incremental approach. These different priorities are indicative of differing fundamental approaches. Some said that monitoring and verification were most important to “get right” initially, while others said that these would come as projects evolve. Verification could follow an International Organization for Standardization (ISO) model of standards, and private auditors could receive a license to conduct audits in a predictable and standard manner. The important factors are consistency and predictability in the setting of standards and avoidance of increased transaction costs.

3. “Sharing Proceeds”— What is Fair?

Again, interpretations of this question varied. Most participants viewed “sharing proceeds” as negotiations between project “sponsors” and host countries over splitting the project proceeds. It was unclear whether “proceeds” referred to some sort of emissions reduction credits, a portion of the project value, or the value of emissions reduced. If sharing proceeds were

part of the negotiation between investor and host, there may be a need for capacity building on the part of certain host countries to ensure their ability to negotiate a fair outcome.

Another group took sharing proceeds to mean sharing the funds for the adaptation provision in Article 12 of the Kyoto Protocol. This interpretation also brought up the questions of what the proceeds were and how these adaptation funds would be shared. The group thought adaptation funds should probably go to the most vulnerable (non-Annex I) countries (e.g., AOSIS rather than the Netherlands or OPEC nations). The group also considered the question of how much of the proceeds should go to adaptation, and whether that amount should be a flat fee or a percentage. A percentage could represent a small proportion from a large amount (to generate more projects) or a large proportion from a small amount. There was concern that if this “tax” is too large, opportunities to use energy-efficient or cleaner technologies will be squandered, since energy infrastructure investments will be made regardless. One suggestion was to make the “tax” very low initially in order to spur early action on the CDM.

Finally, one group discussed sharing proceeds as a means of funding administration of the mechanism and adaptation, and what percentage share should be allocated for those purposes.

4. How Should “Additionality” Be Defined?

This question engendered the greatest amount of discussion. Some participants suggested a list of qualitative factors by sector in each country in order to encourage environmentally friendly development; this need not be the “best available technology,” as that criterion might be too restrictive. Participants raised the question of whether the assessment of additionality should change over time as technology continually improves. One group mentioned that it was important to keep “financial additionality” and “environmental additionality” separate.

Most groups recognized that defining additionality depends on how baselines are calculated, a fact that brought up a second set of questions:

- Should baselines be uniformly determined by sector? By region? By country?
- Should each project have some sort of baseline, determined by “average or historical technology?”
- Would baselines be fixed or raised over time?

5. Are There Different Classes of CDM Projects That are to be Treated Differently?

The idea of having different classes of CDM projects seemed a reasonable concept to many, but no clear method of delineating the classes and their distinctions emerged. Some suggested that clear-cut “win-win” projects (e.g., energy-efficiency or renewable energy projects where no power existed) would get the most credit with the least amount of bureaucracy. Another suggestion was to use discounting through which a certain percentage of the emissions reduction credits would be discounted according to environmental risk. In this way, the crediting process would be more uniform and streamlined, yet it would be possible to account for differences in the environmental or sustainable development value of the project.

In further discussions of crediting, the question of when credits would be issued surfaced. If issuance of credits would be uniform among different types of projects, would credits be issued on an annual basis or at the end of the project when the emissions reductions were proven? These questions were of particular concern for land use change and forestry projects.

6. What Types of Projects Might Qualify? What Sort of Project Would Be a “Clear Winner”?

Criteria for “clear winners” included:

- Not planned before the Kyoto Protocol was signed,
- Little to no greenhouse gas emissions from the project,
- Has the imprimatur of the host country and a wide group of stakeholders,
- No secondary environmental impacts, and
- Rapid accrual and verification of reductions.

Other groups mentioned examples of “clear winner” projects including renewable and energy-efficiency projects; fuel

switching (e.g., coal to combined cycle gas turbines or wind); replanting of damaged farmland or burnt forests; material reuse; and fugitive methane recapture.

7. What Should Be the Role of the “Sustainable Development Community” In the Development of the CDM? What is the Role of “Industry?” How Should These Roles Be Made Manifest?

Few groups had time to answer this last question. One comment was that these constituencies should be as involved as they can, but that ultimately governments do the negotiating. Groups with an interest should make their interests known to their respective governments.

Some Suggestions for “Next Steps” to Move the CDM Forward

- Use USIJI projects to gain an understanding of how guidelines for the CDM would be set. The questions raised by this include: Would all USIJI projects prove eligible under the CDM? Why would they qualify?
- Find projects that are “clear winners” in the eyes of leaders of developing countries to raise their interest and expertise and to move the CDM forward.
- Encourage industry to come forward with case studies as a basis for examining methodologies.
- Discuss intra-company projects and how those would work under the CDM to gain incremental value from the main-stream of investment.
- Conduct outreach to developing countries to make issues and terms understandable.

APPENDIX E

COUNCIL MEMBER PROFILES

CO-CHAIRS

Ray C. Anderson, Chairman and Chief Executive Officer, Interface, Inc. Since founding Interface in 1973, Mr. Anderson has revolutionized the carpet and floor covering industry. Mr. Anderson learned the carpet trade through 14-plus years at various positions at Deering-Milliken and Callaway Mills. Inspired by Paul Hawken's treatise, *The Ecology of Commerce*, Mr. Anderson is changing Interface's technologies and investing in processes that will make the company completely sustainable. Mr. Anderson received the inaugural Millennium Award from Global Green in September 1996. Mr. Anderson was awarded a bachelor of science degree in industrial engineering by the Georgia Institute of Technology.

Jonathan Lash, President, World Resources Institute. Mr. Lash leads the World Resources Institute, a Washington-based center for policy research that provides objective information and practical proposals for policy change that will foster environmentally sound development. Mr. Lash also serves on various national and international committees, including the Organisation for Economic Co-operation and Development's Round Table on Sustainable Development, the Tata Energy and Resources Institute, the Keidanren Committee on Nature Conservation, the China Council for International Cooperation on Environment and Development, and the Dow Chemical Company's Corporate Environmental Advisory Committee. Mr. Lash is also a board member of the Institute for Sustainable Communities and the Wallace Global Fund. He formerly chaired the National Commission on Superfund, directed the Environmental Law Center and Vermont Law School, and served as Vermont's Commissioner of Environmental Conservation and as head of the Vermont Agency of Natural Resources. He was also senior staff attorney at the Natural Resources Defense Council, and served as a Peace Corps volunteer. He has a bachelor's degree in government from Harvard University and a law degree from Catholic University.

EXECUTIVE DIRECTOR

Martin A. Spitzer, Executive Director, President's Council on Sustainable Development. Mr. Spitzer became the Council's executive director in January 1997. Previously, he served as the coordinator of the Council's New National Opportunities Task Force. Before joining the Council, he worked in the office of the U.S. Environmental Protection Agency Administrator on pollution prevention policy. Prior to joining the agency in 1990, Mr. Spitzer worked for the New York State Department of Environmental Conservation. He has also worked for an engineering firm, as an attorney, and for a variety of nonprofit organizations. Mr. Spitzer received his undergraduate degree in economics and history from the State University of New York-Binghamton, a doctorate in policy studies from the School of Management at the State University of New York-Buffalo, and a law degree from the same institution.

MEMBERS

John H. Adams, President, Natural Resources Defense Council (NRDC). Since 1970, Mr. Adams had been executive director of the NRDC, an environmental advocacy group with more than 400,000 members and a budget of over \$33 million; he was named president in 1998. He is chairman of the Open Space Institute and serves on the board of the American Conservation Association, the Catskill Center for Conservation, the League of Conservation Voters, the Winston Foundation for World Peace, the Woods Hole Research Center, the U.S. Committee for the United Nations Development Programme, the Alliance to Save Energy, and the Earth Day Network. He is a graduate of Michigan State University and Duke University School of Law.

Aida Alvarez, Administrator, U.S. Small Business Administration. Ms. Alvarez directs the delivery of a comprehensive set of financial and business development programs for America's entrepreneurs. Before leading the Small Business Administration, Ms. Alvarez was the first director of the U.S. Office of Federal Housing Enterprise Oversight. Earlier, Ms. Alvarez worked as an investment banker and was an award-winning newspaper and television journalist in New York City for 11 years. Her public service background includes two years as vice president at the New York City Health and Hospitals

Corporation. She also served as a commissioner on the New York City Charter Revision Commission. Administrator Alvarez is a *cum laude* graduate of Harvard College.

Bruce Babbitt, Secretary, U.S. Department of the Interior. During his tenure at the Department of the Interior, Secretary Babbitt has initiated the development of large-scale, consensus-based environmental restoration projects. Before heading up the Interior Department, Mr. Babbitt was governor of Arizona from 1978 to 1987. Previously, he spent three years as the state's attorney general. In 1988, he was a Democratic candidate for president. In addition, Mr. Babbitt was national president of the League of Conservation Voters and a founding board member of the Grand Canyon Trust. He graduated from the University of Notre Dame, and has a master's degree in geophysics from the University of Newcastle, England, and a law degree from Harvard University.

Scott Bernstein, President, Center for Neighborhood Technology. Mr. Bernstein and the Center for Neighborhood Technology have been recognized by Renew America, the Enterprise Foundation, the U.S. Department of Energy, and others for innovative approaches used to promote sustainable communities. Before founding the center, he served on the staff of Northwestern University's Center for Urban Affairs and Policy Research. He has been a visiting lecturer at the University of California-Los Angeles, an environmental fellow of the Institute for Transportation Studies at the University of California-Davis, a trustee of the Institute for the Regional Community, and a board member of the Brookings Institution Center for Urban and Metropolitan Policy. Mr. Bernstein studied political science and engineering at Northwestern University.

Carol M. Browner, Administrator, U.S. Environmental Protection Agency (EPA). Administrator Browner is the longest serving administrator in the history of EPA. Over the past six years, Ms. Browner has made protecting public health and the environment while growing the economy a top priority. She has speeded the cleanup of the nation's toxic waste sites. She also led the efforts to clean up and redevelop brownfields and to develop and implement President Clinton's Clean Water Action Plan. She has taken action to update air quality standards for particulate matter and ozone, and is working to reinvent her agency to achieve the best public health and environmental protection for the least cost. From 1991 to 1993, she was secretary of Florida's Department of Environmental Regulation. Earlier, she served as legislative director to then-Senator Albert Gore, Jr., and served on the staff of then-Senator Lawton Chiles. Administrator Browner received her undergraduate and law degrees from the University of Florida-Gainesville.

David T. Buzzelli, Director and Senior Consultant, The Dow Chemical Company. Mr. Buzzelli joined the Dow Chemical Company in 1965 and held a number of positions in research and manufacturing before being appointed director of government and public affairs and a vice president of Dow Chemical U.S.A. In 1986, he was named chairman, president, and chief executive officer of Dow Chemical Canada. He is the past vice president and corporate director of environment, health and safety, public affairs, and information systems. He is also a member of the Dow Corning Corporation Board of Directors. He is a former co-chair of the President's Council on Sustainable Development. Mr. Buzzelli is a member of the World Resources Institute Board and Executive Committee, the International Institute for Sustainable Development Board, and the China Council for International Cooperation on Environment and Development. Mr. Buzzelli has a bachelor's degree from the University of Minnesota in chemical engineering and a master's degree in the same subject from the University of Delaware.

Andrew M. Cuomo, Secretary, U.S. Department of Housing and Urban Development. Since assuming his present position, Secretary Cuomo has focused on more efficient and effective programs, along with an aggressive campaign against waste, fraud, and abuse. Before becoming secretary, he served for four years as the assistant secretary for community planning and development at the U.S. Department of Housing and Urban Development. Before entering federal service, Secretary Cuomo led the New York City Commission on the Homeless. In 1986, he founded both the Housing Enterprise for the Less Privileged and the Genesis Project. Secretary Cuomo served as campaign manager for Mario Cuomo in 1982 and as a special assistant to the governor in 1983. He practiced law from 1983 to 1986. Mr. Cuomo holds an undergraduate degree from Fordham University and a law degree from Albany Law School.

William M. Daley, Secretary, U.S. Department of Commerce. Since becoming secretary in 1997, Mr. Daley has aggressively monitored other nations' trade practices to protect American companies and workers. Secretary Daley served as Special Counsel to the President in 1993, where he coordinated the successful campaign to pass the North American Free Trade Agreement. Previously he practiced law in Chicago and was president and chief operating officer of Amalgamated Bank of Chicago. He has served on corporate boards, and was active in many Chicago-area community projects. Secretary Daley holds a law degree from the John Marshall Law School and an undergraduate degree from Loyola University.

Dianne Dillon-Ridgley, Executive Director, Women's Environment & Development Organization (WEDO). Ms. Dillon-Ridgley has over 20 years of leadership in sustainable development and women's issues domestically and internationally. Prior to heading WEDO, Ms. Dillon-Ridgley was national president of Zero Population Growth from 1994 to 1997. In 1993, she was the first director of the Women, Cancer, and the Environment campaign and has been a senior policy adviser for WEDO since 1994. She represented the World Young Women's Christian Association (YWCA) at the United Nations and as a member of the national board, she chaired racial justice for the U.S. YWCA. She is the U.S. member of the Global Water Partnership, a trustee of the Wallace Global Fund and, since 1987, chair of the Iowa Department of Economic Development's Targeted Small Business Board. She served as co-chair of the PCSD Population and Consumption Task Force, is a director at Interface, Inc., and vice chair of the National Summit on Africa Board of Directors. Ms. Dillon-Ridgley is a founding member of the Institute of Sustainable Design at the University of Virginia School of Architecture. She is a state-certified mediator in Iowa and did her undergraduate work in philosophy at Howard University.

E. Linn Draper, Jr., Chairman, President, and Chief Executive Officer, American Electric Power (AEP). Mr. Draper is also president of Ohio Valley Electric Corporation and its subsidiary, Indiana-Kentucky Electric Corporation. He became chairman, president, and chief executive officer of AEP in 1993. He joined the company in 1992, following 13 years with Gulf States AEP Company, where he served as chairman, president, and chief executive officer. He joined Gulf States Utilities in 1979. Earlier, he served on the faculty and administration at the University of Texas. Mr. Draper holds a bachelor of arts degree from Rice University, a bachelor of science in chemical engineering from the same institution, and a doctorate in nuclear science and engineering from Cornell University. He is a registered professional engineer in the state of Texas.

Randall Franke, Commissioner, Marion County, Oregon. Mr. Franke has served as Marion County Commissioner since 1979. He has been elected chairman of the county board eight times. He has served, often as chair, on many state and regional commissions dealing with prison overcrowding, community development, job training, road finance, health systems, solid waste reduction, youth services, emergency services, mass transit, low-income housing, and senior services. He chairs the EPA's Local Government Advisory Committee, and is a member of the Northwest Council on Sustainable Development. He is a past president of the National Association of Counties. Mr. Franke earned his undergraduate degree from the University of Oregon and holds a master's degree in corrections from the Oregon College of Education.

Dan Glickman, Secretary, U.S. Department of Agriculture. Secretary Glickman brings over two decades of legislative and legal experience to his position. Prior to his confirmation, he represented Kansas's 4th District in the U.S. House of Representatives for 18 years. His committee assignments included the House Agriculture Committee; he chaired the Subcommittee on General Farm Commodities and its predecessor, the Subcommittee on Wheat, Soybeans, and Feed Grains, for six years. He worked on farm bills in 1977, 1981, and 1990; he also was the original author of legislation to streamline and reorganize the Agriculture Department. Additionally, Secretary Glickman chaired the House Permanent Select Committee on Intelligence. Before being elected to Congress in 1976, he was president of the Wichita, Kansas, School Board, and a partner in the law firm of Sargent, Klenda, and Glickman. He has a bachelor's degree in history from the University of Michigan and a law degree from The George Washington University.

Samuel C. Johnson, Chairman, S.C. Johnson & Son, Inc. Since 1967, Mr. Johnson has chaired his 113-year-old family-owned, multinational household products company, which received the 1994 World Environment Center Gold Medal. Mr. Johnson is the recipient of a Lifetime Environmental Achievement Award from the United Nations Environment Programme and of the Charles A. Lindbergh Award. He sits on the boards of the Mobil Corporation, Deere and Company, and H.J. Heinz Company, among others. He is a member of the Sustainable Racine, Inc., Advisory Board and the World Business Council for Sustainable Development. He also serves as chairman of the National Board of Governors of the Nature Conservancy and is regent emeritus of the Smithsonian Institution. Mr. Johnson holds a bachelor's degree in economics from Cornell University and a master's degree in business administration from Harvard University.

Fred D. Krupp, Executive Director, Environmental Defense Fund. Mr. Krupp has been with the Environmental Defense Fund, a national environmental organization that links science, economics, and law to find innovative, economically viable solutions to environmental problems, since 1984. Mr. Krupp serves on the boards of the H. John Heinz III Center for Science, Economics, and the Environment, and the National Environmental Education and Training Foundation. He was also a member of the President's Commission on Environmental Quality and the National Commission on Superfund.

Previously, he spent several years in private law practice, during which time he helped found the Connecticut Fund for the Environment. Mr. Krupp is a graduate of Yale University and holds a law degree from the University of Michigan.

Kenneth L. Lay, Chairman and Chief Executive Officer, Enron Corp. Enron is one of the world's leading integrated electricity and natural gas companies. Mr. Lay was elected as its chief executive officer in 1985 and its chairman in 1986. Before joining Enron, he held top management positions with Houston Natural Gas, Transco Energy Company, and Continental Resources Company. Earlier, he served as a corporate economist for Exxon Company, U.S.A., and deputy undersecretary for energy for the U.S. Department of the Interior. Mr. Lay serves on the boards of several companies. He holds bachelor's and master's degrees in economics from the University of Missouri, and a doctorate in the same subject from the University of Houston.

Harry J. Pearce, Vice Chairman, General Motors (GM) Corporation. Mr. Pearce joined GM as associate general counsel in 1985 after serving as a senior partner in the firm of Pearce and Durick. Prior to his appointment as vice chairman in 1996, he served as an executive vice president, executive vice president and general counsel, and vice president and general counsel. In addition to serving on GM's board of directors, he is also a member of the boards of General Motors Acceptance Corporation, Delphi Automotive Systems Corporation, Hughes Electronics Corporation, Marriott International, Inc., and MDU Resources Group, Inc. He is also a member of the World Business Council for Sustainable Development and the World Economic Forum's Council of Innovative Leaders in Globalization. He received a bachelor's degree in engineering sciences from the United States Air Force Academy and a law degree from Northwestern University.

Steve Percy, Chairman and CEO, BP America, Inc. Prior to assuming his duties at the helm of BP America, Mr. Percy was president of BP Oil in the United States, group treasurer of the BP Company and chief executive of BP Finance International. He began his career with Standard Oil Company in 1976 and joined BP after the two companies merged in 1987. He is a member of the board of directors of GenCorp, Inc., the Greater Cleveland Growth Association, Resources for the Future, and the American Petroleum Institute. Mr. Percy earned a bachelor of science degree in mechanical engineering from Rensselaer Polytechnic Institute, a master's in business administration from the University of Michigan, and a law degree from the Cleveland Marshall College of Law.

Michele A. Perrault, International Vice President, Sierra Club. Ms. Perrault is a member of the Sierra Club board and was its national president from 1984 to 1986 and again in 1993. For the past 13 years, she also has directed the Sierra Club's environmental education workshop for teachers. She is a co-founder and steering committee member for the Bay Area Alliance on Sustainable Development, a member of the board of Greenseal, and chairman of the advisory board for Green Teams. She has served on the National Advisory Council on Coastal Zone Management and on the U.S. Environmental Protection Agency's Environmental Education Advisory Council. Ms. Perrault has worked with the League of Women Voters, New York Zoological Society, and Bank Street College of Education. She has held a number of leadership positions at local, state, national, and international levels helping to build sustainable communities and fostering education for ecologically sustainable development. Ms. Perrault received a bachelor's degree from Hunter College.

Bill Richardson, Secretary, U.S. Department of Energy. Prior to his current position, Secretary Richardson served as the U.S. Ambassador to the United Nations. Earlier, he was elected eight times to represent New Mexico's 3rd Congressional District. In addition to his democratic leadership role in Congress, he was an active member of the Commerce, Resources, and Intelligence Committees. Secretary Richardson has served as President Clinton's special envoy on many sensitive diplomatic missions. He has won freedom for hostages in many difficult places, including Iraq, North Korea, and Sudan. His efforts have earned him two Nobel Peace Prize nominations. Mr. Richardson received a bachelor's degree from Tufts University and a master's degree from The Fletcher School of Law and Diplomacy.

Richard W. Riley, Secretary, U.S. Department of Education. President Clinton chose Richard Riley to be Secretary of Education after Mr. Riley won national recognition for his highly successful effort to improve education in South Carolina. Prior to his current appointment, Secretary Riley served as a state representative and a state senator and was twice elected governor of South Carolina. Secretary Riley is a *cum laude* graduate of Furman University and holds a law degree from the University of South Carolina.

Susan Savage, Mayor, City of Tulsa, Oklahoma. Ms. Savage has served as mayor of her native city since 1992. As the chief executive officer of the third largest employer in Tulsa, Mayor Savage oversees services and capital projects annually budgeted at \$400 million. Mayor Savage is the vice president of the Oklahoma Municipal League and has chaired the U.S. Conference of Mayors' Energy and Environment Committee. She is also a member of statewide panels on emergency services and infrastructure development. Previously, she was the executive director of the Metropolitan Tulsa Citizens Crime Commission for 10 years. Mayor Savage holds an undergraduate degree in criminal justice and economics.

John C. Sawhill, President and Chief Executive Officer, The Nature Conservancy. Before joining The Nature Conservancy, Mr. Sawhill headed the energy practice of McKinsey and Company. He was president of the U.S. Synthetic Fuels Corporation and served as deputy secretary of the U.S. Energy Department in the Carter Administration. Earlier, he was administrator of the Federal Energy Administration; associate director for natural resources, energy, science, and environment of the Office of Management and Budget; and president of New York University. He has served on the boards of several companies, including Consolidated Edison Company, Crane Corporation, and the American International Group. Mr. Sawhill graduated from Princeton University and holds a doctorate in economics from New York University.

Rodney Slater, Secretary, U.S. Department of Transportation. Secretary Slater has worked to ensure that our national transportation system helps to improve safety and quality of life for all users and to enhance communities and the natural environment. Before becoming secretary, Mr. Slater served as the administrator of the Federal Highway Administration. From 1987 to 1992, he was a member of the Arkansas State Highway Commission, serving as its chairman in 1992. He held several other positions in Arkansas, including director of governmental relations at Arkansas State University; executive assistant for economic and community programs for then-Governor Bill Clinton; the governor's special assistant for community and minority affairs; and assistant attorney general in the litigation division of the Arkansas state attorney general's office. Secretary Slater graduated from Eastern Michigan University and earned a law degree at the University of Arkansas.

Theodore Strong, Executive Director, Columbia River Inter-Tribal Fish Commission. As the commission's executive director, Mr. Strong represents, and is an advocate for, the Warm Springs, Yakima, Umatilla, and Nez Perce tribes' ecosystem management philosophies and goals, which combine science and business acumen with traditional Native American values. Previously, Mr. Strong managed his own international trade and consulting company. Mr. Strong is a board member of American Rivers, the Earth Conservation Corporation, Sustainable Northwest, and the Pacific Rivers Council. He was comptroller, budget director, and enterprise director of the Yakima Indian Nation in Washington state, and has also worked for the Bureau of Indian Affairs and the Navajo Tribal Utility Authority. Mr. Strong is a member of the Yakima tribe. He has studied at Draughton's Business College, Tacoma Technical Institute, and Eastern Montana University.

EX OFFICIO MEMBERS

D. James Baker, Under Secretary for Oceans and Atmosphere of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce. Under Secretary Baker is also co-chair of the National Science and Technology Council's Committee on Environment and Natural Resources, co-chair of the Environmental Working Group and vice-chair of the Space Committee of the U.S.-Russian Joint Commission on Economic and Technological Cooperation, and vice-chair of the Science and Technology Committee of the U.S.-South Africa Binational Commission. He was acting chair of the Council on Environmental Quality from 1993 to 1994. Earlier, he served as president of Joint Oceanographic Institutions, Inc. He was co-founder and first dean of the College of Oceanography and Fishery Sciences at the University of Washington and a faculty member at Harvard University. He was elected a fellow of the American Association for the Advancement of Science in 1998. He holds a bachelor's degree in physics from Stanford University and a doctorate in physics from Cornell University.

Sherri Goodman, Deputy Under Secretary of Defense, U.S. Department of Defense (DOD). Ms. Goodman is responsible for DOD's worldwide environmental, safety, and occupational health policies and programs including cleanup at active and closing bases, compliance with environmental laws, conservation of natural and cultural resources, pollution prevention, environmental technology, fire protection, explosive safety, and pest management. In 1996, Ms. Goodman received the DOD Medal for Distinguished Public Service from the Secretary of Defense. Ms. Goodman was a professional staff member and counsel with the Senate Armed Services Committee working for the chairman, Senator Sam Nunn. She has worked as a consultant for the Rand Corporation and as a defense analyst for Science Applications, Inc. Ms. Goodman received her undergraduate degree *summa cum laude* from Amherst College. She received a law degree *cum laude* from Harvard Law

A P P E N D I C E S

School and a master's degree in public policy from the John F. Kennedy School of Government.

Richard Rominger, Deputy Secretary, U.S. Department of Agriculture. Since 1993, Mr. Rominger has helped the Secretary direct the activities of the U.S. Department of Agriculture, a large, diverse department whose mission includes conservation, domestic food assistance, marketing, international trade, meat and poultry inspection, forestry, rural development, research, and education. He is a farmer who has raised a variety of crops with his family near Winters, California. Prior to his service as deputy secretary, Mr. Rominger led California's Department of Food and Agriculture from 1977 to 1982 and was president of the Western Association of State Departments of Agriculture and the Western U.S. Agricultural Trade Association. Mr. Rominger received the California State Fair Agriculturalist of the Year Award in 1992 and the California Farm Bureau Federation 1991 Distinguished Service Award. Mr. Rominger received a bachelor's degree in plant science *summa cum laude* from the University of California-Davis and is a member of the agricultural honorary society of Alpha Zeta.

EMERITUS MEMBERS

Richard Barth, Retired Chairman, President, and Chief Executive Officer, Ciba-Geigy Corporation. Mr. Barth joined Ciba Corporation in 1965 as a legal assistant. Following its merger with Geigy, he became the firm's general counsel. He next served as chief financial officer and as senior vice president from 1980 to 1986, when he became president and chief executive officer of the corporation. He currently serves on the board of the Novartis Corporation. Mr. Barth is a graduate of Wesleyan University and Columbia Law School.

Richard Clarke, Retired Chairman and Chief Executive Officer, Pacific Gas and Electric Company (PG&E). Mr. Clarke began his career as an attorney for PG&E, subsequently holding a number of legal and executive management positions with the firm. He presently serves on the advisory board for the Walter A. Haas School of Business at the University of California-Berkeley, and on the board of trustees for the university's school of law. He also serves on the board of the Nature Conservancy of California, PG&E, Potlatch Corporation, and CNF Transportation Company. Mr. Clarke is a co-chair of the Bay Area Alliance for Sustainable Development. He received both a bachelor's degree in political science and a law degree from the University of California-Berkeley.

Jay D. Hair, President, World Conservation Union. Before his retirement in 1995, Mr. Hair served for 14 years as president of the National Wildlife Federation, the world's largest conservation organization. In 1991, he was appointed to the Investment Policy Advisory Committee as a U.S. trade representative; in 1994, he was reappointed to the Investment and Services Policy Advisory Committee. Mr. Hair serves on the board of directors of several organizations, including Clean Sites, Inc., and the Windstar Foundation. He received a bachelor's degree in biology and a master's degree in zoology from Clemson University; he also holds a doctorate in zoology from the University of Alberta, Canada.

LIAISON TO THE PRESIDENT

George T. Frampton, Jr., Acting Chair, Council on Environmental Quality. Before assuming his duties at the Council on Environmental Quality, Mr. Frampton was the assistant secretary for fish and wildlife and parks at the U.S. Department of the Interior. Prior to his government service, he was president of The Wilderness Society from 1986 to 1993. From 1976 to 1985, he was a partner in the law firm of Rogovin, Stern & Huges. Also during this period, from 1979 to 1980, he was deputy director and chief of staff for the Nuclear Regulatory Commission's investigation into the Three Mile Island nuclear accident. Mr. Frampton served as assistant special prosecutor, Watergate special prosecution force, from 1973 to 1975. Mr. Frampton was a fellow at the Center for Law and Social Policy from 1972 to 1973. He received his undergraduate degree in physics and philosophy *cum laude* from Yale College, his master's, with distinction, from the London School of Economics, and his law degree *magna cum laude* from Harvard Law School.

APPENDIX F

COUNCIL STAFF AND TASK FORCE MEMBERS

COUNCIL STAFF

Martin A. Spitzer, Executive Director
Jack Bowles, Deputy Executive Director
Evangeline Deshields, Office Manager
Christine Ervin, Former Advisor, Climate Change Task Force
Cheryl Little, Metropolitan and Rural Strategies Task Force Coordinator
Catherine McKalip-Thompson, International Task Force Coordinator
David Monsma, Environmental Management Task Force Coordinator
Tamara Nameroff, Climate Task Force Coordinator
Angela Park, Former Director, Communications and Constituency Development
Ken Patterson, Director, National Town Meeting
Patricia Sinicropi, Deputy Director, National Town Meeting
David Slutzky, Former Coordinator, International Task Force
Cynthia Wade, Executive Assistant

PRINCIPAL LIAISONS

Marcia Aronoff, Environmental Defense Fund
Adela Backiel, U.S. Department of Agriculture
Frances Beinecke, Natural Resources Defense Council
Kenneth Blower, BP America, Inc.
Joseph Canny, U.S. Department of Transportation
Roan Conrad, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Maggie Coon, The Nature Conservancy
Wilma Delaney, The Dow Chemical Company
David Festa, U.S. Department of Commerce
David Gatton, U.S. Conference of Mayors
Wendy Gerlitz, Columbia River Inter-Tribal Fish Commission
Jim E. Hartzfeld, Interface Research Corporation
Dale Heydlauff, American Electric Power
Jane Hutterly, S.C. Johnson & Son, Inc.
Holly J. Kaufman, U.S. Department of Defense
Nick Keller, Joint Center for Sustainable Communities, National Association of Counties
Keith Laughlin, Council on Environmental Quality
Linda Lawson, U.S. Department of Transportation
Ronald Matzner, U.S. Small Business Administration
Michael McCloskey, Sierra Club
Judith M. Mullins, General Motors Corporation
Terry Hitchins Nicolosi, U.S. Department of Housing and Urban Development
John Palmisano, Enron Corporation
Jim Pipkin, U.S. Department of the Interior
Claude Poncelet, Pacific Gas and Electric Company
Dan Reicher, U.S. Department of Energy
Lynn Richards, ICF Consulting Group
Carole Wacey, U.S. Department of Education
Donna Wise, World Resources Institute
Rob Wolcott, U.S. Environmental Protection Agency

CLIMATE CHANGE TASK FORCE

Co-chairs

D. James Baker, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Jonathan Lash, World Resources Institute
Steve Percy, BP America, Inc.

Task Force Coordinator

Tamara Nameroff

Council Members and Liaisons

The Climate Change Task Force was a Task Force of the whole Council. Please see the lists of Council members and principal liaisons for these names.

Additional Members

Margot Anderson, U.S. Department of Agriculture
John Atcheson, U.S. Department of Energy
Mike Bennett, Interface, Inc.
Ellen Brown, U.S. Environmental Protection Agency
Michael Campilongo, U.S. Small Business Administration
Ann Carey, U.S. Department of Agriculture
Krishna Chivukula, U.S. Environmental Protection Agency
Kirk Fauver, Federal Highway Administration
Ted Heintz, U.S. Department of the Interior
Bracken Hendricks, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Dennis Heydanek, The Dow Chemical Company
Jackie Krieger, U.S. Environmental Protection Agency
Dan Lashof, Natural Resources Defense Council
Linda Lawson, U.S. Department of Transportation
Ronald Matzner, U.S. Small Business Administration
Ben Mieremet, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Rebecca G. Moser, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Tia Nelson, The Nature Conservancy
Art Rosenfeld, U.S. Department of Energy
Tim Stuart, U.S. Environmental Protection Agency
Donald Trilling, U.S. Department of Transportation
James Turnure, U.S. Environmental Protection Agency
Rob Watson, Natural Resources Defense Council
John Williams, General Motors Corporation
Kurt Zwally, U.S. Department of Energy

ENVIRONMENTAL MANAGEMENT TASK FORCE

Co-chairs

Carol M. Browner, U.S. Environmental Protection Agency
Michael McCloskey, Sierra Club
Harry J. Pearce, General Motors Corporation

Task Force Coordinator

David Monsma

Council Members

D. James Baker, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
David Buzzelli, The Dow Chemical Company

Dianne Dillon-Ridgley, Women's Environment and Development Organization
Sherri Goodman, U.S. Department of Defense
Samuel C. Johnson, S.C. Johnson & Son, Inc.
Steve Percy, BP America, Inc.
Richard E. Rominger, U.S. Department of Agriculture

Council Member Liaisons

Arden Ahnell, BP America, Inc.
Jay Benforado, U.S. Environmental Protection Agency
F.H. "Chip" Brewer, S.C. Johnson & Son, Inc.
Ann Carey, U.S. Department of Agriculture
Wilma Delaney, The Dow Chemical Company
Dean Drake, General Motors Corporation
Chuck Fox, U.S. Environmental Protection Agency
Nancy Levenson, S.C. Johnson & Son, Inc.
Rebecca G. Moser, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Robert Phillips, General Motors Corporation
Lynn Richards, ICF Consulting Group
Margaret Rogers, The Dow Chemical Company
Maureen Sullivan, U.S. Department of Defense

Additional Members

John Bridges, U.S. Postal Service
Nevin Cohen, Inform, Inc.
Tom Davis, Tom Davis Associates
Ira Feldman, United Nations Association
Anne Kelly, U.S. Environmental Protection Agency, Region I
Alison Kinn, U.S. Environmental Protection Agency
Clair Krizov, AT&T
Bob Massie, Coalition for Environmentally Responsible Economies
Mildred McClain, Citizens for Environmental Justice
Shelley Metzenbaum, University of Maryland
Judy Odoulamy, U.S. Department of Energy
William Panos, Massachusetts Department of Environmental Protection
David Pellow, University of California-Berkeley
Claude Poncelet, Pacific Gas and Electric Company
Janet Ranganathan, World Resources Institute
Gail Robarge, U.S. Environmental Protection Agency
Robert Shinn, New Jersey Department of Environmental Protection
John Spinello, New Jersey Department of Environmental Protection
Tim Stuart, U.S. Environmental Protection Agency
Ethan Tim Smith, U.S. Geological Survey

METROPOLITAN AND RURAL STRATEGIES TASK FORCE

Co-chairs

Scott Bernstein, Center for Neighborhood Technology
Andrew Cuomo, U.S. Department of Housing and Urban Development
Susan Savage, City of Tulsa, Oklahoma

Task Force Coordinator

Cheryl Little

Council Members

John H. Adams, Natural Resources Defense Council
Aida Alvarez, U.S. Small Business Administration
Bruce Babbitt, U.S. Department of the Interior
D. James Baker, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Richard Barth, Ciba-Geigy Corp.
Carol M. Browner, U.S. Environmental Protection Agency
Richard Clarke, Pacific Gas and Electric Company
William Daley, U.S. Department of Commerce
Dianne Dillon-Ridgley, Women's Environment and Development Organization
Randall Franks, Marion County, Oregon
Sherri Goodman, U.S. Department of Defense
Jay D. Hair, World Conservation Union
Samuel C. Johnson, S.C. Johnson & Son, Inc.
Bill Richardson, U.S. Department of Energy
Michele Perrault, Sierra Club
Richard W. Riley, U.S. Department of Education
Richard E. Rominger, U.S. Department of Agriculture
John C. Sawbill, The Nature Conservancy
Rodney Slater, U.S. Department of Transportation
Theodore Strong, Columbia River Inter-Tribal Fish Commission

Council Member Liaisons

Adela Backiel, U.S. Department of Agriculture
John Bullard, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Roan Conrad, National Oceanic and Atmospheric Administration, U.S. Department of Commerce
Hank Dittmar, Surface Transportation Policy Project
Jim East, City of Tulsa, Oklahoma
Greg Entourage, S.C. Johnson & Son, Inc.
Glenn Eugster, U.S. Environmental Protection Agency
Wendy Gerlitz, Columbia River Inter-Tribal Fish Commission
Noel Gerson, U.S. Department of Defense
Ted Heintz, U.S. Department of the Interior
Robert Hickmott, U.S. Department of Housing and Urban Development
Nick Keller, National Association of Counties
Linda Lawson, U.S. Department of Transportation
Pat LeDonne, U.S. Department of Energy
Ronald Matzner, U.S. Small Business Administration
Jerry McNeil, National Association of Counties
Peter Melhus, Pacific Gas and Electric Company
Terry Hitchins Nicolosi, U.S. Department of Housing and Urban Development

Angela Nugent, U.S. Environmental Protection Agency

Additional Members

Thomas Bier, Cleveland State University

Carl Bouchard, U.S. Department of Agriculture

Kendra Briechle, International City/County Management Association

Evert Byington, U.S. Interagency Working Group on Sustainable Development Indicators

Michael Campilongo, U.S. Small Business Administration

Kate Clancy, Wallace Institute

Smith Covey, U.S. Department of Agriculture

Brian Dabson, Corporation for Enterprise Development

Peter Dreyfuss, U.S. Department of Energy

Fred Ducca, U.S. Department of Transportation

Andrew Euston, U.S. Department of Housing and Urban Development

Carol Everett, U.S. Conference of Mayors

Otto Gutenson, U.S. Environmental Protection Agency

Michalann Harthill, U.S. Geographic Services

Peter Hawley, American Planning Association

Eliot Hurtwitz, National Association of Counties

John Irby, National Association of Counties

Jill Kruse, Surface Transportation Policy Project

Judith LaBelle, Glynwood Center

Ruth McWilliams, U.S. Department of Agriculture

Michael Myers, U.S. Department of Energy

Brand Niemann, U.S. Environmental Protection Agency

David Ouderkirk, U.S. Environmental Protection Agency

Bill Painter, U.S. Environmental Protection Agency

Carol Parker, U.S. Department of Defense

Linda Rimer, U.S. Environmental Protection Agency

Rachel Sandals, U.S. Small Business Administration

Kelly Shulman, National Association of Counties

Michael Shuman, Institute for Policy Studies

Michael Springer, U.S. Department of Treasury

Joshua Stearns, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Dale Thomson, U.S. Department of Housing and Urban Development

Harriet Tregoning, U.S. Environmental Protection Agency

Mark Tumeo, Cleveland State University

Gary Valen, Humane Society of the United States

Tim Warman, American Farmland Trust

Helen Payne Watt, Corporation for Enterprise Development

Adam Weinberg, Colgate University

Ed Weiner, U.S. Department of Transportation

Marc Weiss, Center for National Policy

David Williams, U.S. Department of the Interior

INTERNATIONAL TASK FORCE

Co-chairs

Dianne Dillon-Ridgley, Women's Environment and Development Organization

William Daley, U.S. Department of Commerce

Kenneth Lay, Enron Corporation

Task Force Coordinator

Catherine McKalip-Thompson

Council Members

John H. Adams, Natural Resources Defense Council

D. James Baker, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Carol M. Browner, U.S. Environmental Protection Agency

Jay D. Hair, World Conservation Union

Jonathan Lash, World Resources Institute

Michele Perrault, Sierra Club

Harry J. Pearce, General Motors Corporation

Steve Percy, BP America, Inc.

Richard E. Rominger, U.S. Department of Agriculture

John C. Sawhill, The Nature Conservancy

Rodney Slater, U.S. Department of Transportation

Council Member Liaisons

Adela Backiel, U.S. Department of Agriculture

Kenneth Blower, BP America, Inc.

Roan Conrad, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Maggie Coon, The Nature Conservancy

David Festa, U.S. Department of Commerce

Jeffrey Hunker, U.S. Department of Commerce

G. Mustafa Mohatarem, General Motors Corporation

John Palmisano, Enron Corporation

Jacob Scherr, Natural Resources Defense Council

Tim Stuart, U.S. Environmental Protection Agency

Donna Wise, World Resources Institute

Rob Wolcott, U.S. Environmental Protection Agency

Additional Members

Dan Bilello, U.S. Environmental Protection Agency

Barbara Bramble, National Wildlife Federation

Linda Descano, Salomon Smith Barney

Susan Fletcher, Congressional Research Service

John Ganzi, Environment & Finance Enterprise

Bradford Gentry, Yale Center for Law and Environment

David Hales, U.S. Agency for International Development

Bracken Hendricks, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Chris Herman, U.S. Environmental Protection Agency

Melinda Kimble, U.S. Department of State

Dan MaGraw, U.S. Environmental Protection Agency

Bert Schacknies, U.S. Department of Transportation

Kathy Sessions, United Nations Association

Frances Seymour, World Resources Institute

Sandra Smithey, U.S. Agency for International Development

APPENDIX G

FOR FURTHER READING AND ADDITIONAL INFORMATION

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