Charting a Course for Sustainability

By Molly Harriss Olson

The United States Responds to Agenda 21's Challenge

After three years of research and deliberation, the President's Council on Sustainable Development (PCSD) has delivered its report to President Clinton. The 186-page document—a mixture of philosophy, goals, and scores of recommendations—is designed to spearhead a national debate on how to achieve a new type of prosperity based on sustainable development. In preparing the report, council members used as their touchstone the following definition of sustainability: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[1] This definition first appeared in the United Nations Brundtland commission's 1987 report *Our Common Future*, the pioneering work on sustainable development. Following its lead, the PCSD report, entitled *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*, calls for wide-ranging changes that would fundamentally alter how the United States solves problems. At its core is the simple, yet far-reaching assumption that social, economic, and environmental problems are inescapably intertwined and must be solved together.

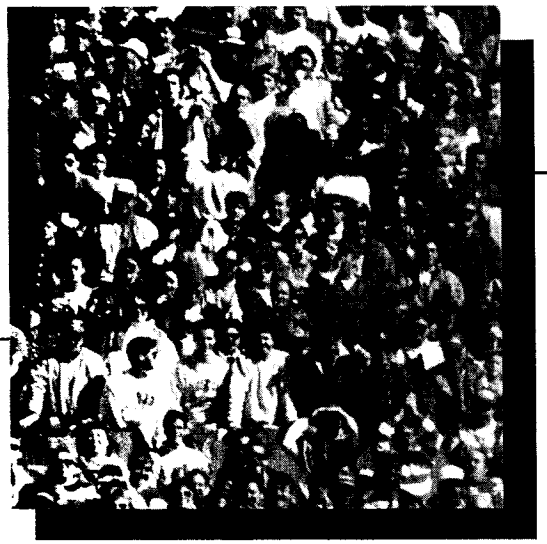
The report recommends that government share leadership, control, and information with business, schools, communities, nongovernmental organizations, and individuals and calls on the U.S. Congress to remove legislative impediments to more collaborative, local decisionmaking. The main goal is to get government, business, and individuals to hardwire tests for economic fairness and ecological sustainability into their daily decisionmaking.

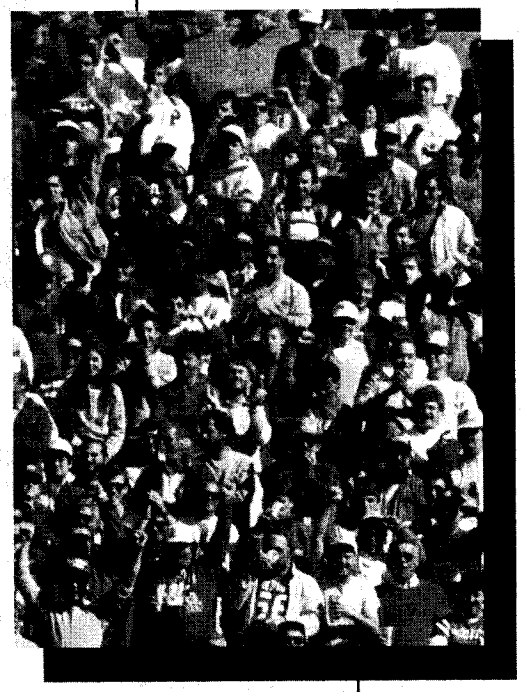
This article first provides some background on the council and describes its working process. It then addresses the substance of the report itself: the ten goals for sustainability, proposals for new economic, social, and environmental indices; recommended policy modifications; changes in information gathering and education; and suggestions on how to rebuild community.

A Brief History

Established by President Clinton through an executive order in June 1993, PCSD has 25 members (see the box on page 12). These men and women are leaders in industry, government, and environmental, Native American, and civil rights organizations. The secretaries of agriculture, commerce, energy, and interior also sit on the council along with the administrator of the U.S. Environmental Protection Agency (EPA). Council members served on eight task forces, which created the report's technical foundation. The task forces covered sustainable communities; eco-efficiency; energy and transportation; natural resource management and protection; sustainable development principles, goals, and definitions; population and consumption; public

THE PICTURE CUBE—HERB SNITZER





linkage, dialogue, and education; and sustainable agriculture. (Individual task force reports are available as appendixes to the report.)

At its inception, President Clinton asked PCSD to develop a far-sighted plan of action to "achieve economic prosperity that would benefit present and future generations without harming natural resources or the Earth's biological systems." He wanted a plan that could be supported by the entire council.[2] This entailed a challenging method for reaching recommendations. Members made proposals, offered views, engaged in dialogue, and debated issues until consensus could be reached. No one had veto authority.

The full council met for ten day-long or multi-day sessions. To tap local expertise, four of these meetings were held in cities that had major sustainable development projects under way. (The report incorporates case studies of Seattle, Chicago, Chattanooga, and San Francisco's projects.) Two hundred to five hundred people attended each meeting, and more than 5,000 followed the council's progress through its newsletter *Sustainable Developments*. Requests for public comment on draft goals and recommendations received several hundred replies.

The council decided at the outset not to produce a report that would be immediately salable politically nor serve only as a blueprint for specific legislation or regulations. President Clinton had asked the council to produce a bold, long-term plan that would set a course for the future. The principle that institutions and individuals must adopt a new way of thinking that inextricably links economic, equity, and environmental issues lies at the heart of the plan spelled out in the report. The experience of local sustainable development projects recounted in the report underscores that what promotes economic prosperity can also be good for the Earth and for social equity. To this end, a shift from single-minded advocacy of environmental protection, economic development, or social well-being to action that ensures progress on all three fronts is advocated. In the council's estimation, this kind of holistic thinking holds the key to sustainability.

The report also stresses the benefits of collaborative decisionmaking—the attempt to include all institutions and citizens who are affected by and who care about an issue in the debate. People hunger to have a direct and meaningful role in decisions that affect them.[3] Promoting the participation of those who will be significantly affected by institutional decisions creates a much more effective framework for equitably resolving controversial issues: People will devote more effort to protecting the environment and improving their quality of life only if they are included in the decisionmaking process. To involve the individual citizen in this way, however, some power will need to be shifted from the federal and state level to cities and local communities.

Corporations and individuals are also encouraged to adopt the concept of stewardship. On the corporate level, this would necessitate assuming a much more far-reaching responsibility for products. Companies would have to monitor every phase of production from mining and procurement of raw materials through the manufacture, distribution, use, and finally, recycling and reuse of their products. For individuals, embracing stewardship means taking

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increased responsibility for actions that affect the environment and the overall quality of life. This implies an active, educated citizenry involved in their own governance.

These fundamental changes are needed as the bedrock on which specific recommendations can be implemented. For example, to implement the new regulatory system for environmental management that the report proposes, federal, state, and local governments will have to cooperate to develop strategies applicable to local areas. These strategies, moreover, will have to integrate economic, social, and environmental issues.

Ten Goals and New Indices

In the report, PCSD outlines ten national goals for a sustainable future. These goals are interdependent and must be achieved in unison so that economic, environmental, and social equity issues are accorded equal weight. The ten goals are:

- ensure every person the benefits of a healthy environment;
- sustain a healthy economy that affords the opportunity for a high quality of life;
- guarantee equity and opportunity for economic, social, and environmental well-being;
- protect and restore natural resources for current and future generations;
- encourage stewardship;
- urge people to work together to create healthy communities;
- create full opportunity for citizens, businesses, and communities to participate in and influence the natural resource, environmental, and economic decisions that affect them;
- move toward stabilization of the U.S. population;
- lead in developing and carrying out sustainable development policies globally; and
- ensure access to formal education and lifelong learning that will give citizens an understanding of the concepts involved in sustainable development and prepare them for meaningful work and a high quality of life.[4]


UNITED NATIONS PHOTO 180208—M. TZOVARAS

Norwegian Prime Minister Gro Harlem Brundtland chaired the World Commission on Environment and Development, which produced the landmark report Our Common Future.

To measure the country's progress in achieving each of these goals, the report recommends that a set of indicators covering the areas the goals address be established. For example, the council feels that traditional measures of economic activity such as gross domestic product are incomplete because they fail to include many critical factors such as natural resource depletion. The new indicators would, when taken together, more accurately measure the nation's prosperity by incorporating some of those measures.

Proposed new measurements, for example, would supplement the unemployment rate with information about wage levels and job quality. Other proposed economic indicators would show the changes in the number of persons living below the poverty level and the rates of resource depletion plus environmental costs.

The proposals for the new set of indicators draw upon a program developed in Oregon. In 1989, Oregonians found themselves confronting unprecedented population growth, a diversifying economy, and a resource crisis in both the timber and salmon industries. Hoping to guide the direction of the changes that were sure to come, a group was formed to assess the trends affecting Oregon's future and to develop tools to inform future decisions. Made up of state legislators and chaired by former governor Barbara Roberts, the Oregon Progress Board, as the group was known, identified 259 benchmarks to measure the state's well-being.[5] Core indicators measure fundamental factors such as family stability, quality of life, and environmental and economic health. Urgent indicators gauge critical issues facing the state, such as endangered wild salmon runs and rising teen pregnancy. According to the board, "Failure to reach urgent benchmarks in the near term threatens our ability to achieve other, more fundamental, benchmarks years down the road."[6] The state began using the indicators in 1995 and plans to update them bi-annually.

Broad-Based Policy Changes

The recommended policy changes outlined in the report aim to empower

individuals and institutions to move rapidly along the path toward sustainability. As a major step toward that goal, the report reiterates the council's conviction that the United States' goal must be to become a zero-waste society. With this goal in mind, companies across the country are already adopting "eco-efficient manufacturing" principles.[7] Eco-efficiency or industrial ecology involves redesigning industrial processes to mimic natural ecosystems' recycling of energy and natural resources. The goal of the process is a closed loop that creates little or no waste. This makes good economic sense and preserves the environment. Intel, a computer chip manufacturer, was an early leader in the adoption of eco-efficient manufacturing principles. The company was able to increase production at its Aloha, Oregon, plant by 2.5 times without increasing emissions by adopting new environmentally sensitive production processes.

In the regulatory area, the council explicitly recognized that national standards that protect human health and the environment are the foundation of any effective system of environmental protection. However, the report urges the federal government to increase the cost-effectiveness of the current environmental management system by creating opportunities for environmental goals to be attained at lower costs. Further, the government should simultaneously implement a new system that provides greater flexibility to achieve superior environmental results. Under such a system, technical standards for individual plant processes would be replaced by performance standards. This change would encourage companies to achieve superior results and cost savings through innovation. However, regulatory agencies would need to ensure that the interests of heavily affected communities are protected. In making this recommendation, environmental leaders on the council joined with their corporate colleagues in the realization that while the historic "command and control" system has been successful for a quarter of a century, only innovation will enable business to achieve the higher level of environmental protection needed.[8]

Project XL, currently being tested by EPA, offers selected companies and state and local governments the regulatory flexibility they need to streamline their manufacturing processes to both reduce costs and achieve superior environmental results. In November 1995, President Clinton announced the six companies—Intel Corporation, Anheuser Busch Companies, HADCO Corporation, Merck & Co., Incorporated, AT&T Microelectronics, and 3M Corporation—and two government agencies—California's South Coast Air Quality Management District and the Minnesota Pollution Control Agency—chosen to participate in Project XL's first phase.[9] During this phase, Intel, for example, will enter into a contract with EPA and the Arizona Department of Environmental Quality for its new facility in Chandler, Arizona. Under the terms of that contract, Intel will agree to achieve better environmental results than currently required by legislation in exchange for regulators granting the company greater regulatory flexibility and expedited permitting procedures.[10] This performance-based approach grew directly out of PCSD's work. It is hoped that programs like Project XL will enable industry to experiment with bold innovations to achieve the greatest results at the lowest cost. However, strict standards of accountability and enforcement ensure that public health and the environment are safeguarded.

The report also calls for greater use of market forces to protect the environment. It encourages the expansion of market-driven pollution control programs, such as emissions trading and pollution fees, and urges business to voluntarily adopt codes of product stewardship.[11] In line with these codes, manufacturers, suppliers, users, and disposers of products would share responsibility for the environmental effects of product use and industrial waste production. Demonstration projects would identify critical links, key participants, and opportunities for stewardship in the product chains.

To review the effects of federal taxes and subsidies on the goals of sustainable development, the report

TERRY WILD STUDIO—TERRY WILD

The PCSD report stresses the crucial role individual citizens and local organizations can play in implementing sustainable development policies.

ENVIRONMENTAL SERVICES DIVISION, PUBLIC UTILITIES DEPARTMENT, ANAHEIM

Recently named the nation's first recipient of a "Project XL for Communities" award, Anaheim, California, has a number of innovative environmental improvement programs.

recommends establishing a national commission to suggest changes in tax policies (without increasing the overall tax burden).[12] The goal would be to encourage employment and economic opportunity while discouraging environmentally damaging production and consumption practices:

The federal government raises more than $1 trillion per year, predominantly (nearly 90 percent) by taxing wages and personal and corporate income. And since tax policies influence individual and institutional investment patterns and consumption decisions, the Council believes that an effective use of the tax system could be a powerful tool in meeting the challenges of sustainable development. . . . Ideally, a tax system that supports the recommendations of the Council would promote growth and jobs in a socially equitable manner, while discouraging pollution and other forms of inefficiency.[13]

The council recognizes that any tax reform proposals must not place a disproportionate burden on lower income individuals and families. Another recommendation calls for the government to eliminate subsidies that are inconsistent with the economic, environmental, and social goals of sustainable development. The report also suggests that all 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; otherwise they should be eliminated.*[14]

Using the Information Revolution

In assessing the critical role information collection and dissemination could play in achieving a sustainable society, the council concluded that the current system would have to change dramatically to fulfill it goals. In particular, the federal government's system of collecting, organizing, and disseminating data on economic, environmental, and social conditions needs to be revamped to improve quality and accessibility.[15] All sectors of government should also promote widespread access to the information available through computers by offering computer training, making information formats more consistent within and among government agencies, and improving computer networks. Moreover, the report urges all levels of government to focus on developing better methods to measure the quality and quantity of renewable and nonrenewable resources, such as forests, lakes, minerals, and fish. Such initiatives could build off data currently being accumulated through interagency, regional ecosystem assessments being conducted in the Pacific Northwest, the upper Columbia River Basin, California's Sierra Nevada region, and the southern Appalachian Mountains.[16] Twenty years of partnership efforts between The Nature Conservancy and state government agencies have already produced the Heritage Network, a collection of state databases which provides detailed information on the distribution and abundance of plant and animal species and types of ecosystems.[17]

The report also calls for a revision of corporate accounting practices to ensure that decisionmakers have a clearer idea of the environmental costs of products.[18] Accurate environmental accounting has a number of benefits. Many of the environmental costs of

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products, such as salaries for personnel in the environmental areas, are currently buried in other accounts. As a result, managers make crucial decisions about which products to manufacture and which technologies to use without all the relevant facts. Systems of environmental accounting rectify this situation and thereby aid managers in using materials and energy more efficiently.

Council members are convinced that only by making use of this "second information revolution" will institutions, communities, and citizens have the information—and hence the ability—to take on the greater civic and environmental responsibilities on which sustainability depends.

The Role of Education

To prepare citizens for their individual responsibilities in achieving sustainable development, the council recommends some changes in curriculum. The idea is to teach students at all levels the interdependence of the environment, social equity, and the economy because

educating for sustainability does not follow academic theories according to a single discipline but rather emphasizes connections among all subject areas, as well as geographic and cultural relationships.[19]

To help teachers build this concept into their curriculums, the Environmental Literacy Institute at Tufts University has begun a program to provide environmental literacy training to secondary school teachers and university faculty.[20] Over the course of a nine-day session, participants learn about topics such as life cycle assessment, design for the environment, cost-benefit analysis, market-driven technological innovations, and responsible industry practices. *Blueprint for a Green Campus*, the result of a collaboration between colleges and universities nationwide, recounts strategies to make sustainability a central focus of education programs.[21]

One program already teaching children about sustainability is called Global Learning and Observations to Benefit the Environment (GLOBE).[22] Under its auspices, students are gathering information to help scientists monitor global climate change. Begun in 1994 by Vice President Al Gore, GLOBE enables students, teachers, and scientists from around the world to work together to monitor the global environment and share their information via the Internet. The measurements they collect augment those from satellite and ground monitors and will provide the basis for the first worldwide environmental data base. To date, more than 2,500 schools in the United States and 32 partner countries have signed up to be GLOBE sites. More than 110,000 scientific observations have already been accumulated.

THE GLOBE PROGRAM

Students participating in the GLOBE program conduct a series of experiments monitoring the local effects of climate change.

Rebuilding Communities

Flourishing communities are the foundation of a healthy society. One critical measure of the United States' potential for long-term sustainability is the revitalization of many communities that were once clean, safe, and rich in educational and employment opportunities. Sustainable development can easily remain remote and theoretical unless it is linked to peoples' daily lives and their fundamental needs, such as jobs, clean air and water, and education.

Chattanooga, Tennessee, dubbed the most polluted city in the United States in 1969, provides a prime example of how practicing sustainability can transform a community. At one time, Chattanooga's air was so dirty that drivers had to use their headlights at noon. However, in 1984, at the height of a crisis triggered by recession, environmental degradation, governmental infighting, and general urban decline, a broad coalition of residents came together to share their ideas and goals for reinvigorating Chattanooga. More than 1,700 people turned out to participate in a series of "visioning" meetings.

These meetings paved the way for revitalizing efforts. Chattanooga's

riverfront was transformed; it is now home to fishing piers, restaurants, housing, a business park, and an aquarium (proposed by a high school senior) that generated $133 million in documented economic activity in 1992.

The city also became a virtual laboratory for the research, design, and manufacture of electric-powered buses, which now form the backbone of Chattanooga's public transit system. The municipal transit authority teamed up with a private laboratory and a new company to provide free shuttles in the downtown area. Today, Chattanooga is home to the world's largest electric-powered bus fleet.

The community-wide effort has led to the construction of 4,166 units of new affordable housing; the establishment of a family violence shelter; the implementation of new government infrastructure that increases accountability and encourages a broader, more diverse pool of candidates for local office; the development of a plan for a county-wide network of greenways along streams to enhance the integrity of the watershed; the institution of a city-wide recycling program with sorting contracted through a resource facility for mentally challenged adults; and the offering of environmental education training workshops to teachers.

No longer the nation's dirtiest city, Chattanooga is now a model for other communities considering sustainable development plans. The city literally transformed itself and its future prospects by actively thinking of the economy, the environment, and social equity as inextricably linked. Building on Chattanooga's example and other community efforts like it, the report offers a number of recommendations to other communities looking to similarly transform their future (see the box on this page).

Natural Resource Stewardship

The United States' rich natural resources are a major source of its material prosperity and an inspiration for its spiritual values. Preserving these resources is a vital concern. In studying conflicts over natural resource use, the council concluded that collaborative decisionmaking holds one key to cultivating the holistic thinking needed to get various interests moving toward a sustainable future. Moreover, it found that across the country all types of stakeholders were devising their own style of collaborative decisionmaking to move beyond conflict.[23] For example, stakeholders within the Feather River watershed in northeastern California, an area containing three national forests—Plumas, Lassen, and Tahoe—created a forum for people living there called the Quincy Library Group (after the library where they first met) to use "common sense to achieve [their] goals: healthy forests and healthy small-town economies through time."[24]

In another example of collaborative decisionmaking, The Nature Conservancy and Georgia Pacific Corporation agreed in 1994 to implement a unique partnership to manage 21,000 acres of wetlands along North Carolina's lower Roanoke River. Georgia Pacific owns the land, but a joint committee, including representatives of the U.S. Fish and Wildlife Service as well as the company and The Nature Conservancy, decides where and under what conditions timber harvesting can occur.

Religious organizations in Louisiana have also adopted the collaborative approach in their effort to preserve the state's wetlands from erosion. Each year 35 square miles of wetlands washes into the sea. The Louisiana Coastal Wetlands Interfaith Stewardship Plan, formed in 1986, has helped congregations across the state to understand the scale of the problem and to coordinate efforts to address it.[25] The 20 forums that churches and synagogues have sponsored to discuss how to protect and restore wetlands attracted more than 2,000 people and helped to build grassroots support for coastal protection. According to Mark Davis, executive director of the Coalition to Restore Coastal Louisiana, "The presence of the religious community helped break open the debate in ways that might not otherwise have been possible. People act differently when they meet in a church instead of a

HOW TO REVITALIZE COMMUNITY

Building on the experiences of communities across the country, notably Chattanooga, San Francisco, Chicago, and Seattle, PCSD generated a number of recommendations for planners, policymakers, and citizens undertaking revitalizing projects. Each of the suggestions incorporates elements of sustainable development thinking.

Strategic community planning—Citizen groups that ideally reflect diverse populations should identify key issues, create a vision for the future, and set goals and measurable benchmarks that capitalize on unique local advantages.

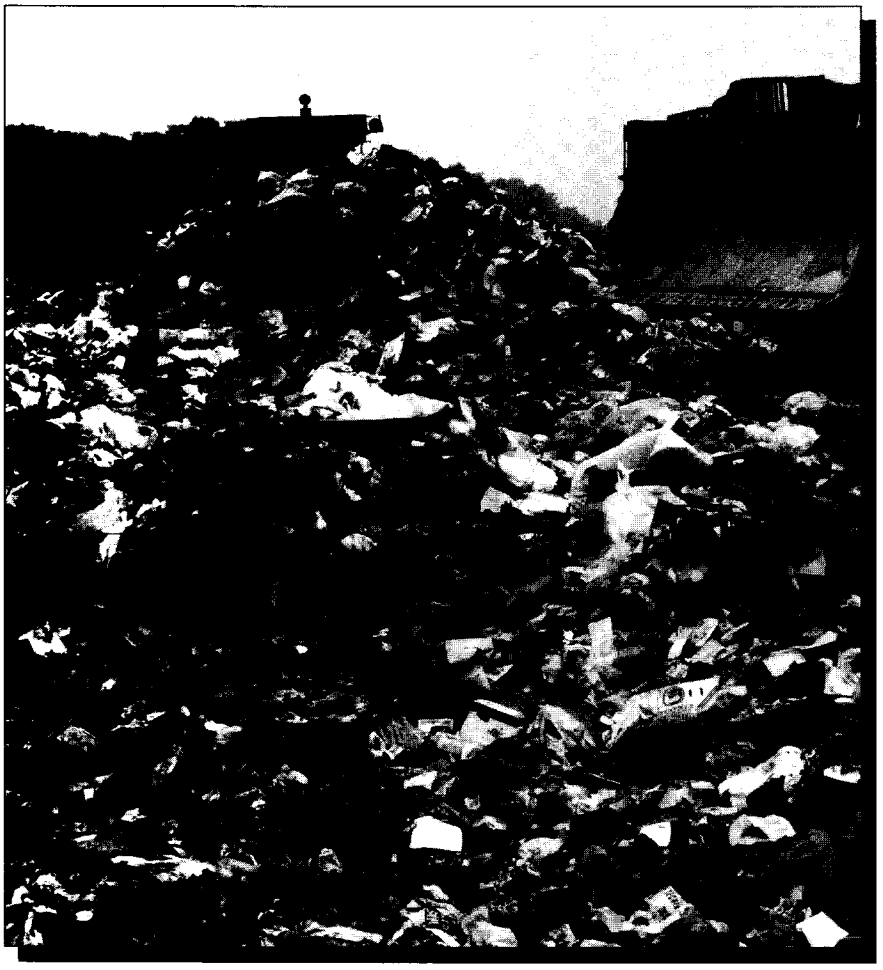
Federal incentives—To spur communities to deal with issues that transcend jurisdictions, the federal government should consider fiscal options that include pooling local property taxes to increase equity in public services, improvements in education, and reductions in economic incentives for sprawl.

Green design and innovation—Governments should work with builders, architects, developers, contractors, and community groups to design and rehabilitate buildings to use energy and natural resources efficiently, enhance health and the environment, preserve historical and natural settings, and contribute to a sense of community.

Planning policy—When designing new communities and improving existing ones, efficient land use, mixed-use and mixed-income development, public open space, and diverse transportation options should be provided.

Siting development—Geographic growth of communities should be managed and new ones sited to decrease sprawl, conserve open space, respect nature's carrying capacity, and protect them from natural hazards.

Brownfield sites—Regulatory flexibility and incentives should be provided to reduce process barriers to make these contaminated, abandoned, or underused lands more attractive for redevelopment.



U.S. ENVIRONMENTAL PROTECTION AGENCY

To embrace a truly sustainable lifestyle, the United States will have to rethink its consumption patterns.

corporate boardroom or state hearing room."[26] In 1989, voters approved the Louisiana Wetlands Conservation and Restoration Trust Fund by a three-to-one margin. A year later the U.S. Congress approved the Coastal Wetlands Planning, Protection, and Restoration Act; the legislation included $1.5 billion to help restore Louisiana's wetlands.

To encourage more of these collaborative approaches in the future, the report recommends that the president issue an executive order and that state governors give similar orders to get government agencies to use voluntary, multistakeholder approaches to manage natural resources and resolve natural resource conflicts.

Overall, the report advises cooperative action in protecting ecosystems. Efforts to safeguard water quality or biodiversity should be undertaken in tandem with attempts to conserve the integrity of the entire ecosystem, such as plans to maintain regional watersheds. Furthermore, it urges all levels of government to create incentives among landowners, corporations, government agencies, and resource users to preserve natural resources. It also recommends that commercial users of natural resources pay the full cost of their depletion, that the United States achieve sustainable management of forests by 2000, and that fisheries habitats be restored and overfishing eliminated to rebuild and sustain depleted wildstocks of fish in U.S. waters.

Tackling Population and Consumption

Although the United States ranks third in population, it is by far the world's largest consumer and waste generator. Even minor changes in U.S. consumption patterns thus have an enormous effect on global sustainability. Clearly, the scale of resources needed to maintain current quality of life standards must be substantially reduced. However, continued population growth makes it more difficult to mitigate waste and consumption patterns. In light of these facts, the report advocates that the United States move to stabilize its population while reducing its waste and consumption patterns: "In the United States each is necessary; neither alone is sufficient."[27]

To reduce the high rate of unintended pregnancies, the report contains proposals to expand access to family planning and reproductive health services. Full funding of Title X of the Public Health Service Act of 1970, which provides for family planning services for low-income persons, is strongly urged.[28] Provisions for offering adolescents increased guidance on values and abstinence (as well as information to those who are already sexually active) through families, social institutions, and community-oriented, adult mentoring programs are also described. The report encourages partnerships among community organizations to enhance educational and work opportunities for women, particularly teens.

Teens Teaching Teens serves as an example of the kind of pregnancy prevention program the report advocates. A partnership between Atlanta's public schools and the Grady Health System started in 1985, this program trains high school juniors and seniors to speak to eighth graders about postponing sex. A study conducted by the Ford Foundation shows that students who participate are less likely to be sexually active as a result of this peer support. By the senior year of high school, participants' abstinence rates drop, but their use of birth control practices is significantly higher than among those students who did not participate in the program.[29]

The Casa Loma project in Los

Angeles takes a somewhat different approach to the problem, combining housing with an aggressive agenda of educational, social, and business programs to help impoverished families. Its programs provide infant and child care and after-school activities for latchkey kids; train adults and children in word processing, mathematics, literacy, etc.; and sponsor courses in budgeting, finance, micro-enterprise development, and job placement. The project, which relies on private donations and public funds, is run by New Economics for Women. This organization is a nonprofit corporation owned and operated by women dedicated to improving the lives of poor single parents and their families and strengthening opportunities for women to empower themselves.[30]

International Responsibility

Massive deforestation, biodiversity loss, ocean damage, and climate change are all crucial global environmental issues that demand international action. These processes are proceeding at an accelerated rate and their consequences remain difficult, if not entirely impossible, to predict with certainty. However, even in the case of climate change, the most complicated of these issues, the international scientific community now believes that the balance of evidence suggests a discernable human influence that is expected to lead to higher surface temperatures, a rise in sea levels, and more severe droughts and/or floods in some places. Cooperative solutions based on multilateral global agreements hold the key to resolving these issues. In the recent past, the nations of the world managed to structure such agreements, coordinating a phaseout of chlorofluorocarbons, which threatened the Earth's stratospheric ozone.

The report strongly urges the United States to cooperate with these international agreements. Such cooperation would entail, among other things, ratification of the United Nations Con-

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An election year is an ironic time to release the report of the President's Council on Sustainable Development. While our culture, media, and institutions all emphasize—and distort—the short-term interests of American voters, the report calls for a consideration of the long term and the fundamental changes that the future portends.

Against the apparent irrationality of politics, the council's mild and sensible recommendations are a notable achievement. They articulate goals that no stump speeches take up, but that few citizens would dispute: greater efficiency in industry; market-compatible regulation; taxes that induce less pollution rather than burdening employment; better information and education; revitalized communities; and more cooperative decisionmaking instead of court battles. The problem is not the ends but the means. No one knows how to reach these goals, nor how much it would cost to try.

The report contains promising beginnings and a generous share of hopes. In the end, though, sustainable development remains a mirage and the belief that economic prosperity, environmental quality, and social justice can be pursued simultaneously without tradeoffs seems a seductive illusion. Like its distinguished predecessors Agenda 21 and *Our Common Future*, this report offers no concrete or specific ways to transform the mirage into the oasis we want it to be.

Yet a "sustainable" future looms on the horizon. Birth rates are dropping around the globe, a side effect of economic growth and the steady (if still slow) widening of opportunities for women. Many, if not all, indicators of pollution seem to decline once per capita incomes rise to a certain level. An optimist might see in these trends an automatic leveling off of human numbers and pollution-generating consumption. Pessimists fear that sustainability will look more like the Dark Ages—the collapse of international order and a retreat into armed settlements, where barbarians clamor at the gates and biodiversity and other unique values of the planet are lost forever. Whatever the spin, the gap between the laudable aims and inadequate means of the council's report has yet to be bridged.

The question is how. In a word, we must *learn*. At every level of human endeavor, from individual to international, we face the immense task of learning whether sustainable development is possible, and if so, how. Then we must summon the will and resources to move toward the goals we set for ourselves.

The objectives set forth by the President's Council on Sustainable Development imply three kinds of learning. The most difficult type—a fundamental change in outlook— is latent in the council's two most controversial goals: stabilization of the American population and reduction of material consumption. As anthropologist Marshall Sahlins put it, we must come to believe in becoming rich by wanting little rather than by having much. The evolution of smaller families, where quality time has displaced sheer numbers of children, illustrates one area in which many people have already embraced this concept. But we have yet to deal with material consumption. This is a large challenge that is likely beyond the reach of government, at least in democracies built upon promises of prosperity.

The second kind of learning is jurisdictional. Molly Harriss Olson describes the need to hardwire sustainability into daily decisionmaking. This process will have to address the fact that human borders and natural boundaries rarely coincide, either in space or time. We define borders along rivers even though rivers are the centers rather than the edges of ecosystems, and we harvest trees at rates that yield an appropriate return on investment, not those that preserve the land. The instances are legion, and bringing about change will be hard. It will require changing legal and government institutions and shifting property owners' expectations. Today's debt-for-nature swaps and conservation easements are straws in the wind.

Thirdly, we must accumulate greater knowledge about how ecosystems actually respond to human intervention. To date, we know little about how whales or soils react to exploitation. Consider how the proliferation of deer (and ticks bearing Lyme disease) in suburbs has surprised us. We need adaptive management—strategies that treat human interactions with nature

vention on Biological Diversity and the adoption of an active leadership role in crafting future international environmental agreements. (The United States, the report notes, is the only developed country that has yet to sign the Convention on Biological Diversity and because of this risks not having the opportunity to participate in or shape the treaty's evolution.) The federal government is also encouraged to promote participation of nongovernmental organizations and private industry in international agreements and decisionmaking and to increase its financial support for bilateral and international institutions.

Furthermore, the report states that the federal government, assisted by nongovernmental organizations and private industry, should maintain scientific research and data collection related to global environmental challenges. It should continue efforts to guarantee that international trade agreements do not threaten environmental health and safety standards. And government at all levels should work with industry to increase exports of environmental technologies.

Fulfilling Agenda 21 Commitments

At the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro, the United States committed itself to pursue Agenda 21—to prepare a plan to confront and overcome the most pressing environmental, health, and social problems facing the planet.[31] The PCSD report represents a partial fulfillment of that commitment.

Members of the council and the many other people involved with PCSD recognize that the report itself is only the first of many steps. The hope is that the document will serve as both a plan of action and a vision of the future. To this end, the report sets out roles for everyone to play. Institutions and individuals alike must incorporate "sustainability thinking" into their

as experiments—so that we can learn from error and surprise. While difficult, adaptive management is easier than the other two types of learning, if only because humans need not change their values to learn what works and what does not.

Each of these modes of learning requires a combination of government and private involvement—to accommodate, to institutionalize, and to implement any gains. Private actors need to do a great deal, but government remains essential. Amid this election year's implausible promises, attack advertisements, and balloons filled with irreplaceable helium, it may be hard to remember that democracies have done a more creditable job than other forms of government in looking to the future. But they have—so far.

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The President's Council on Sustainable Development chose to adopt the Brundtland Commission's definition of sustainable development. In doing so, it accepted the premise that social, economic, and environmental problems are intertwined and must be resolved together. Unfortunately, however, Molly Harriss Olson's article provides little insight into what (one hopes) are the substantive policy proposals contained in the report.

The report recommends that government share leadership, control, and information with business, schools, communities, and individuals, calling on the U.S. Congress "to remove legislative impediments to more collaborative, local decisionmaking." The idea of local decisionmaking runs throughout the report and is prominently featured in the article. Neither document, though, says a great deal about the impact such transfers of power are likely to have on the resolution of many issues (e.g., transboundary pollution and wealth redistribution) that require action at the national level.

Of equal concern is the report's advocacy of technological innovation alone as the means "to achieve the higher level of environmental protection needed." This stance is hardly adequate, nor is the reliance the report seems to place on "regulatory flexibility" and corporate voluntarism. Both can lead to a balkanization of standards and a patchwork of environmental protection. The twin goals of regulatory flexibility and "strict standards of accountability and enforcement ensuring that public health and the environment are safeguarded," which Ms. Olson highlights, are contradictory. Because of government's fiscal constraints, increasing regulatory flexibility is far more likely to make government more rather than less dependent on industries monitoring themselves.

The faith the report ultimately places in voluntary action as a means to ensure environmental protection and advance the cause of sustainable development is somewhat misplaced. While the 3M Corporation provides a terrific model of enlightened management that should be applauded and emulated, expecting the chemical industry in general, the auto industry, the energy industry, the smelting industry, and the mining industry (to name a few) to protect public health and the environment through voluntary action risks a return to the air and water standards of the 1950s. Voluntarism is hardly a panacea for our environmental dilemma. In an era of growing environmental problems and cuts in government spending, voluntarism has emerged as a fashionable solution. Nevertheless, it does not provide a real substitute for clear regulatory targets and timetables for compliance. Voluntarism within individual sectors of society cannot and does not relieve elected governments of the responsibility to govern with a broader interest in mind, namely the public good.

The report also stresses the importance of using market forces, primarily emissions trading permits and pollution fees, to protect the environment. In reality, however, these instruments can become licenses to pollute. Through the purchase of emissions permits, the most serious polluters can continue their activities. (The article, furthermore, includes no discussion of pollution prevention or the required policy shifts that would facilitate its implementation.)

The report's recommendation that a national tax commission be established to suggest changes in tax policies, with the goal of "encouraging employment and economic opportunity while discouraging environmentally damaging production and

daily lives. Industry must initiate environmental strategies, creating clean new technologies and moving beyond compliance. Government regulators and legislators should use sustainability as a framework for progress, encouraging industry to make voluntary improvements and offering incentives for progress. EPA and the U.S. Department of Energy are doing this today through a range of voluntary programs like XL, WasteWise, ClimateWise, and Green Lights that offer industry benefits for participating. Environmental organizations can do their part by rallying public support and promoting individual efforts to achieve sustainable development. Communities can take action by incorporating sustainable development principles in developing their economic, social, and physical infrastructures. The work of building a sustainable future will also have to have an impact beyond the borders of the United States. Sustainable development values must be instilled in people around the world because business crosses national boundaries every day through global markets, global production, and global technology transfer.

This report represents the beginning of the United States' journey toward sustainable development. To succeed, the people of the United States must want to continue the effort.

NOTES

1. World Commission on Environment and Development (the Brundtland commission), *Our Common Future* (Oxford, U.K.: Oxford University Press, 1987), 43.
2. J. Lash and D. Buzzelli, "Institutions—The President's Council on Sustainable Development," *Environment*, April 1995, 44.
3. For more on individual perspectives on sustainable development, see T. Nagpal, "Voices from the Developing World: Progress Toward Sustainable Development," *Environment*, October 1995, 10.
4. President's Council on Sustainable Development (PCSD), *Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future* (Washington, D.C.: U.S. Government Printing Office, 1996), 12–13. To order the report, contact GPO (tel.: 202-512-1800).
5. Ibid., page 66.
6. Ibid.
7. Ibid., page 39. For more on the theory and practice of "eco-efficient" management or industrial ecology, see R. A. Frosch, "Industrial Ecology: Adapting Tech-

consumption problems," represents an important contribution to sustainable development policy. Many share the belief "that an effective use of the tax system could be a powerful tool in meeting the challenges of sustainable development." (The Brundtland commissioners were the first to make this point.) Direct and indirect tax subsidies to energy, mining, fisheries, forestry, agriculture, transportation, and trade amount to a trillion dollars per year in OECD countries. It will take immense political will, however, for the United States to follow through on the council's recommendations concerning subsidies.

One wonders further what distinction the council is drawing between practicing sustainability and plain and simple regional development and reconstruction. Are changes in the U.S. Constitution required to achieve this end? What kind of "sustainability" is to be pursued within the context of rebuilding once clean and safe communities? For example, are the batteries of Chattanooga's electric-powered bus fleet recharged using solar, coal, or nuclear-produced energy?

While quite eloquent in places, the council's ten goals ultimately address the pre-Brundtland agenda, namely environmental protection. The sustainable development agenda is in fact much broader. It includes environmental protection but aims to integrate environmental, economic, and equity goals. The proposed ten goals—if implemented—would guide the United States toward better conservation of nature, a more protected environment, and perhaps a more equitable distribution of wealth. They would not change the present pattern of natural resource exploitation or address the country's immense dependence on fossil fuels and other sources of nonrenewable energy. Furthermore, democracy and sustainable development are better served in the end by ensuring access to opportunity rather than simply having the opportunity to achieve economic, environmental, and social well-being.

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The report from the President's Council on Sustainable Development challenges the United States to embrace ways of living and working that will ensure the long-term health of our species and our ecosystems. Government, business, and communities are urged to cooperate to achieve this goal. Along the tough road that lies ahead, however, the nation will have to grapple with the many conflicts between the sustainable development vision and the status quo. Efforts to create a sustainable transportation system bring such conflicts into clear focus.

While other nations, including Germany and Japan, are currently developing the fuels and vehicles of the future, U.S. automobile and oil companies promote refinements of petroleum-based technologies. To assume a leadership role in the global transportation revolution, the United States will have to shed its reliance on the petroleum-driven internal combustion engine.

The case for making such a fundamental change is overwhelming: Despite enormous reductions in gasoline emissions, the 190 million vehicles currently on the road are the largest single source of air pollution in the United States. They contribute half of the emissions regulated under the Clean Air Act and 31 percent of the carbon dioxide emissions implicated in global warming. Millions of Americans in major urban areas breathe air that violates public health standards largely because of vehicle emissions. Furthermore, competition for petroleum resources continues to grow. China, India, and other developing nations are interested in increasing their access to automobiles. If the developing world were to imitate our petroleum-based transportation system, our access to oil supplies may be severely constricted.

The elements of a sustainable transportation system are all in place. (These aspects are outlined in INFORM's latest report, *Harnessing Hydrogen: The Key to Sustainable Transportation.*) The natural gas vehicle (NGV) industry that has emerged in the 1990s provides the first major step forward. With more than 300 companies selling NGV equipment, 50,000 vehicles on the roads, and 1,100 refueling stations, this cleaner, domestically plentiful fuel can go a long way toward meeting our near-term transportation needs. Investing in systems to transport and store natural gas today will pave the way for the delivery of fully renewable hydrogen fuel tomorrow.

nology for a Sustainable World," *Environment*, December 1995, 16; and Office of Science and Technology Policy, *Technology for a Sustainable Future* (Washington, D.C., 1994).

8. For more on pollution prevention, see S. K. Friedlander, "Pollution Prevention: Implications for Engineering Design, Research, and Education," *Environment*, May 1989, 10; M. Dorfman, W. R. Muir, and C. G. Miller, *Environmental Divide: Cutting More Chemical Wastes* (New York: INFORM, 1992); and M. Wise and L. Kenworthy, *Preventing Industrial Toxic Hazards* (New York: INFORM, 1992).

9. PCSD, note 4 above, page 36.

10. Ibid.

11. See R. N. Stavins, "Harnessing Market Forces to Protect the Environment," *Environment*, January/February 1989, 14; and R. N. Stavins and B. W. Whitehead, "Dealing with Pollution: Market-Based Incentives for Environmental Protection," *Environment*, September 1992, 6. For more on voluntary corporate environmental codes, see J. Nash and J. Ehrenfeld, "Code Green: Business Adopts Voluntary Environmental Standards," *Environment*, January/February 1996, 16. Many companies and organizations have already adopted voluntary stewardship programs. Examples include EPA's Green Programs such as the Energy Star initiatives, Environmental Defense Fund/MacDonald's partnership, and initiatives sponsored by the Business Council for Sustainable Development, National Association of Chemical Distributors, and Synthetic Organic Chemical Manufacturers Association.

12. PCSD, note 4 above, page 47.

13. Ibid., pages 45–46. For more on environmental taxes, see R. N. Morgenstern, "Environmental Taxes: Is There A Double Dividend?," *Environment*, April 1996, 16; and F. Muller, "Mitigating Climate Change: The Case for Energy Taxes," *Environment*, March 1996, 12.

14. PCSD, note 4 above, page 48.

15. For more on the role of information centers, see W. C. Clark, "Enhancing Compliance with Environmental Agreements," *Environment*, May 1995, editorial.

16. PCSD, note 4 above, page 135.

17. Ibid., page 136.

18. See Nash and Ehrenfeld, note 11 above; and G. Atkinson, "Greening the National Accounts," *Environment*, June 1995, 25.

19. PCSD, note 4 above, page 71.

20. Ibid., page 73.

21. Campus Green Vote, *Blueprint for a Green Campus: The Campus Earth Summit Initiatives for Higher Education*, project of the Heinz Family Fund (Washington, D.C., 1995).

22. PCSD, note 4 above, page 76.

23. E. W. Pinkerton, "Translating Legal Rights into Management Practice: Overcoming Barriers to the Exercise of Co-Management," *Human Organization* 51 (1992): 330–41.

24. J. B. Little, "Ecosystem Management: The Quincy Library Group," *American Forests*, February 1995, 22.

25. PCSD, note 4 above, page 120.

26. Ibid.

27. Ibid., page 144.

28. *Public Health Service Act of 1970*, 42 U.S. Code, subchapter VIII, title X, 300 et seq (1988).

29. PCSD, note 4 above, page 148.

30. Ibid., page 151.

31. For more on UNCED, see P. M. Haas, M. A. Levy, and E. A. Parson, "Appraising the Earth Summit: How Should We Judge UNCED's Success?" *Environment*, October 1992, 6; E. A. Parson, P. M. Haas, and M. A. Levy, "A Summary of the Major Documents Signed at the Earth Summit and the Global Forum," *Environment*, October 1992, 12; and G. F. White, W. C. Clark, A. McGowan, and T. O'Riordan, "Taking Stock of UNCED," *Environment*, October 1992, editorial.

Many consider hydrogen too dangerous to use. Yet hydrogen has safely fueled the U.S. National Aeronautic and Space Administration's space program for decades. Hydrogen can be produced either from natural gas or by splitting the water molecule, and we know how to store and transport it by pipeline. Advanced demonstration internal combustion engine vehicles produced by Daimler-Benz, BMW, and Mazda all burn hydrogen. When converted to electricity in a fuel cell, hydrogen may represent the ultimate sustainable alternative to fossil fuels. Nonpolluting, fuel-cell electric vehicles are between two and three times more fuel efficient than conventional automobiles. In late 1994, Canada's Ballard Power Systems sold the first commercial fuel-cell bus for use at Los Angeles International Airport. Since then, the Chicago Transit Authority has purchased three more buses.

The obstacle preventing the United States from rapidly developing a sustainable transportation system based on hydrogen fuels is neither scientific, technological, or economic. It is the inertia of U.S. automobile and oil interests. While they have produced some cleaner-fuel vehicle options, these interests have for the most part focused on resisting government proposed zero-emission vehicle goals and promoting a $37 billion investment in "reformulated gasoline," which will give us only 10 percent cleaner air.

Natural gas and hydrogen infrastructure development and vehicle refinement will require the redirection of funds currently devoted to petroleum-based fuel and engine systems. The U.S. Department of Energy currently spends the majority of its $18 billion budget on research into fossil and nuclear fuels. Tens of billions of dollars are spent on military actions to secure our foreign oil supplies.

The economic incentives and performance stimuli embraced by the council will be vital in promoting swift change. Both government and business leaders recognize the long-term goal of sustainability, but the problem lies in how we define "long term." Generous tax credits can stimulate purchase of natural gas, hybrid electric, and (eventually) hydrogen-powered vehicles. Increased research and development spending could refine NGV, hydrogen, and electric-vehicle systems. A modified tax structure could make us feel the true cost of using finite fossil fuels and dealing with their emissions while rewarding the use of renewable solar resources. Setting government performance goals for ultra-low and zero-emission vehicles could stimulate a competitive environment not only for today's industries but for tomorrow's entrepreneurs.

With a strong national commitment, the United States can take the lead in creating transportation systems that safeguard the environment, protect human health, and allow the nation to compete successfully in the global automotive markets of the 21st century.

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Surprise, surprise: Business and green leaders can agree on something! The report recently issued by the President's Council on Sustainable Development represents the culmination of three years of work. It advocates less bureaucracy; use of economic instruments of environmental policy; high standards; rebuilding communities; making use of the information revolution; and natural resources stewardship.

This report is a remarkable achievement. One deficiency does deserve to be mentioned, however. It relates to Chapter 4 of Agenda 21, which discusses sustainable lifestyles. The American (or, for that matter, European) lifestyle is not sustainable: Per capita resource use is too high by roughly a factor of ten. The report, however, touches only briefly on this issue in the discussion of the council's goals for stabilizing the U. S. population. Small wonder. President George Bush openly declared that the American way of life was not up for negotiation at the 1992 Earth Summit in Rio de Janeiro. Despite this, though, I see in the report's general recommendations scope for dramatic improvements in resource productivity, which would allow quality of life to be maintained at a much lower rate of resource consumption. This should be a core point for discussion in any future deliberations regarding U.S. sustainable development policy.

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