

ARTICLES

Progress Toward Sustainability: A Report Card and A Recommended Agenda

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Editor's Summary

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America is approaching a tipping point on sustainability. We are recognizing that environmental problems also limit economic opportunity, job creation, and social well-being, and even compromise our national security. While there continue to be holdouts who view greenhouse gas emissions, loss of biodiversity, toxic chemicals, sprawl, and other environmental problems as “merely environmental,” their number and influence is shrinking. It is also increasingly evident that we can build a more robust economy, improve national security, and create good new jobs by protecting and restoring the environment. We are near the point where it will be impossible to take action of consequence—whether it be in economic policy, education, foreign relations, environment, or even the war on terrorism—without this broader and deeper perspective on sustainability.

All of that said, the United States is not on the verge of actually becoming sustainable. Far from it. Since 2002, we have most often moved in the wrong direction—toward greater consumption of energy, materials, land, and other resources, and more negative environmental impacts, with damaging social, economic, and security consequences. But we are at least reaching a point where decisionmakers understand issues within a sustainability framework, and understand why that perspective is both attractive and necessary.

The pace, scope, and intensity of sustainable development activity has increased in the United States since 2002. At that time, in “virtually every area of American life, a few people and organizations [were] exercising leadership for sustainability.”¹ The number of such people and organizations, in both public and private sectors, has greatly increased since that time. Their activities are increasing in confidence and sophistication, they are achieving positive and attractive results, and these results are encouraging others to imitate and improve on what they have accomplished. They are also asking better questions, and providing better answers, on what it means to be truly sustainable.

The prominence of climate change and the visibility of its effects on all issues and sectors have also grown since 2002. Climate change has become a major driver in recent sustainability efforts by corporations, religious organizations, colleges and universities, and local and state governments. And it is increasingly clear that climate change will affect all other natural resources—including freshwater, oceans and estuaries, and biodiversity—in ways that are likely to adversely affect human quality of life. Climate change, in other words, is becoming the public face of unsustainable development. It is increasingly seen as a dominant—if not *the* dominant—sustainable development issue.

This Article has two parts. Part I of this Article is an overview, based on the contributions of the book's 41 authors, of

1. John C. Dernbach, *Synthesis, in STUMBLING TOWARD SUSTAINABILITY* 1, 2 (John C. Dernbach ed., 2002).

what we have achieved or not achieved since 2002. While it is framed as a report card, it is in narrative form, and does not contain “grades.” We leave it to the reader to decide who or what deserves an “A” or an “F,” or something in between.

On some topics, there was enough positive news to warrant special treatment. These may not be the only topics that warrant such treatment, but they are identified separately to emphasize that some areas have shown more progress than others. We would be much further along the journey to sustainability if all areas of American life had made as much recent progress.

Part II of this Article identifies 10 broad recommendations that the contributing authors make for the next 5 to 10 years. The journey toward sustainability will almost certainly take more than a generation. The purpose of these recommendations is to identify concrete steps that can be taken right now.

I. A Report Card

A. Six Areas of Significant Progress

The United States has made significant progress since 2002 in at least six areas: local governance, brownfields redevelopment, business and industry, higher education, kindergarten through 12th-grade education, and religious organizations.

Local governments have made tremendous strides toward sustainability in recent years, amid broader recognition that a good environment can enhance quality of life and bolster local economic competitiveness. Mayors in particular have attracted increasing notice in launching and supporting many path-breaking green measures. The Mayors Climate Protection Agreement has now been endorsed by more than 850 mayors from all 50 states, the District of Columbia, and Puerto Rico. Yet fragmented regional governance, sprawling (and often inequitable) land use patterns, and the lack of consistent federal and state support continue to pose formidable challenges to local efforts to address critical sustainability issues.

A hallmark of sustainable land use development is remediation and reuse of brownfields, which are properties contaminated by prior industrial activity. Over the past two decades, states have fostered brownfields redevelopment through voluntary cleanup programs. These programs received a boost in 2002 when the federal Superfund statute was amended to protect developers from certain liabilities if they conduct voluntary cleanups. Still, a parcel-by-parcel approach continues to dominate brownfields law and policy, rather than an overall vision for the community.

Sustainable business practices in the United States went from being just a “movement” to the mainstream of the market in 2007. American business has accepted the fact that climate change is real and has potentially dire consequences. It is also increasingly clear to business that pursuing the triple bottom line—economy, society, and environment—provides many profitable opportunities. A growing number of American and European businesses have entered into multi-stakeholder partnerships to improve public health or environmental quality, or to reduce poverty. Others are issuing voluntary public reports

on their social and environmental impacts and accomplishments, and many have adopted voluntary standards for labor conditions, environmental practices, and human rights. Corporations making sustainability efforts are also increasingly attractive to investors.

Sustainability in kindergarten through 12th-grade education has made remarkable progress since 2002, although the overall effort is still fragmentary and incomplete. State educational standards increasingly support education for sustainability. More and more schools and educational institutions are embracing sustainability paradigms; providing students with sustainability-enhancing knowledge, attitudes, and skills; and assessing progress toward sustainability. On the other hand, the recent heightened focus on testing in traditional subjects makes it difficult for sustainability’s newer, interdisciplinary approach to gain a foothold.

Colleges and universities across the United States are increasingly practicing sustainability across the entire range of their activities. Despite the continuing drive to specialize within traditional academic disciplines, courses that incorporate sustainability concepts are being developed in a variety of disciplines. Sustainability-oriented research is increasingly funded in the sciences, and initiatives are also under way to bring the social sciences and humanities into the research dimension. Initiatives to make campus operations more sustainable are now standard practice, and some universities and colleges are actively promoting sustainable development in their surrounding communities and beyond.

A growing number of Americans of every religious faith affirm a global and ecumenical ethic of a just and sustainable earth community. Some congregations now have committees or action groups, as well as special moments of ritual life, that affirm the spiritual and ethical importance of “caring for creation.” More faith communities in the United States intend to reduce their ecological footprint and protect the commons by eating locally grown organic food (including humanely treated food animals), purchasing imported products that are “fair-traded,” using appropriate technology, and conserving energy while reducing waste. The question now is how seriously religious communities and ethicists in the United States will act to grapple with climate change and other eco-social threats.

B. Consumption, Population, and Poverty

The United States continues to consume a disproportionate share of the world’s energy and natural resources, has a rapidly growing population, and faces significant problems of poverty and social and economic inequity.

The United States leads the world in the overall use of natural resources and, in most cases, in per capita use of resources, including fossil fuels and other natural resources and materials. The consumption of construction materials accounts for the largest share of the material footprint of the United States, due largely to the rapid growth of the housing sector. At the same time, manufacturing and construction

systems have been slowly shifting toward green products and clean technologies.

Over the 20th century, the United States developed a superlatively wealthy society on the basis of cheap and abundant fossil fuel energy. Since 2002, America has shown mixed progress in transitioning to a more sustainable energy system. On the positive side, the energy and carbon intensity of the country's gross domestic product (GDP) continued to show favorable long-term trends of decline, and energy end-use efficiency also continued to improve. However, increased fossil fuel consumption (and the resultant growing greenhouse gas emissions), stagnant efficiency standards (until late 2007, when Congress strengthened some standards), and expanding corn-based ethanol production have been factors moving the energy system in a less sustainable direction.

Population growth in the United States raises particular environmental concerns because of the high level of Americans' per capita consumption. Between 1990 and 2000, the nation's population increased more than over any 10-year period in U.S. history, and the first decade of the 21st century may well surpass the 1990s. Yet since 2002, there have been no major changes to U.S. policies that might have demographic effects, such as immigration regulations, restrictions on abortions, the tax code, and foreign aid policies.

Deepening economic inequality and high levels of poverty are major problems for the United States economy, for our democratic institutions, and for our environment. A less equitable distribution of economic resources works against sustainable consumption and production; those with low and moderate incomes usually cannot afford the initial up-front investment for more energy-efficient automobiles and homes.

C. Conservation and Management of Natural Resources

The overall structure of our environmental and natural resources laws has changed relatively little, with a few modest forward steps and perhaps a greater number of backward steps, despite continuing challenges that are made harder by climate change.

Although U.S. residents enjoy enviable access to ample supplies of safe freshwater, pollution continues to pose risks to human health, aquatic ecosystems remain significantly impaired throughout the country and face increasing risks due to urbanization and other development, and water supplies will be strained as population continues to grow and as global warming affects the amount and distribution of water supplies. Federal programs to protect and manage freshwater resources continue to operate under a legal regime that has existed for several decades. The most recent promising initiatives have occurred at the state, local, or private levels.

America's ocean policy continues to be fragmented. Despite the recommendations of two independent commissions, the George W. Bush Administration has resisted an ecosystem-based approach. Recent legislative proposals and President Bush's designation of a large coral reef ecosystem off Hawaii as a marine national monument provide some reason for hope.

The greatest amount of air pollution comes from burning fossil fuels. From 2002 to 2006, atmospheric concentrations of ground-level ozone, carbon monoxide, fine and coarse particulates, lead, sulfur dioxide, and nitrogen dioxide all declined to a modest degree. Yet regulatory efforts by the U.S. Environmental Protection Agency (EPA) during the period are a mix of forward and backward steps, and the United States has still not met the Clean Air Act's health-based requirements concerning the scope and timing of reductions for urban air pollution.

Despite the government's commitments in the United Nations Framework Convention on Climate Change to "aim" to stabilize greenhouse gas emissions at 1990 levels and to exercise leadership in reducing greenhouse gas emissions, in 2006, U.S. emissions were significantly above 1990 levels. In 2001, President Bush repudiated the Kyoto Protocol, which would have required the United States to reduce its greenhouse gas emissions by 7 percent from 1990 levels by 2008 to 2012. To some degree, energy legislation adopted in 2005 and 2007—mandating greater efficiency in appliances, lighting, and motor vehicles, among other things—will reduce future emissions. In addition, public support for stronger action has increased in response to growing scientific evidence.

Biodiversity conservation remains an illusive goal in the United States. Although no standard, systematic assessment of the state of biodiversity exists in the United States, the clear message from a variety of sources is that we are squandering our rich heritage of species and ecosystem diversity through continuing habitat destruction. Conservation remains a formal domestic and policy objective, but the 1992 Biodiversity Convention remains unratified. The Bush Administration has compromised the country's public and private biodiversity by its general hostility to environmental protection and mandatory greenhouse gas reduction, and by its successful efforts to open large tracts of public lands, much of them important wildlife habitats, to energy exploration and production. One bright spot is growing attention to marine biodiversity. Another is acceleration in the private acquisition of large amounts of undeveloped land and the dedication of this land to uses that are generally consistent with biodiversity conservation.

Efforts toward sustainable forestry are also a mixed story. Three forces are moving private forest management toward more sustainable practices: state and federal forestry laws; the continued increase of land conservation transactions on private forest land; and the growth in forest product certification, which allows retailers to label forest products as grown in a sustainable manner. In the past few years a significant amount of state forest land has been certified by the Forest Stewardship Council (an international entity) and the Sustainable Forestry Initiative (created by the American Forest and Paper Association, but now legally independent), or both. On the other hand, in 2005, the U.S. Forest Service authorized large-scale exceptions to a 2001 regulation that generally prohibited road construction and timber harvesting in roadless areas of national forests. As this book went to press, the fate of the "roadless rule" remained tied up in the courts.

D. Waste and Toxic Chemicals

Americans continue to generate large amounts of waste and toxic chemicals, although some efforts to reduce the amount or toxicity of waste and chemicals are promising.

Efforts to manage toxic chemicals and pesticides since 2002 are a mix of forward and backward steps. For pesticides, the United States has made progress toward sustainability in terms of exercising appropriate caution, assuring inter-generational equity, and taking more hazardous pesticides and specific pesticide uses out of commerce. On the other hand, the Toxic Substances Control Act, which is now more than 30 years old, has not been amended despite a growing view that the statute should require more information about chemicals and do more to reduce risks. In addition, the Bush Administration has opted to use only voluntary approaches for managing risks of nanomaterials, and to ignore their unique properties and possible implications for health and the environment.

American laws concerning hazardous waste have made little progress toward sustainability since 2002. EPA initiated a voluntary waste minimization program for 31 toxic, persistent, and bioaccumulative chemicals. Yet the amount of hazardous waste generated actually increased between 2004 and 2005, and U.S. laws still do not mandate decreases in the generation of industrial hazardous wastes. Implementation of the Superfund Act has been handicapped since 1995 by the absence of special taxes to support cleanups; reliance on general fund revenues has meant a significant decline in cleanups. In addition, the United States has still not ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes.

The most obvious and tangible result of consumption in the United States is the amount and variety of trash we generate. American patterns of consumption have intensified: larger homes, more possessions, and increasing levels of construction and demolition wastes. Landfills continue to receive most of the waste generated. Recycling and composting continue to make some gains, but with dramatic variations in the states. Pay-as-you-throw programs, in which disposal fees are based on the amount of waste generated, now reach one-quarter of the country's population, and studies indicate they can reduce residential waste generation.

E. Land Use and Transportation

Land use and transportation patterns continue to be unsustainable overall, in spite of increasing smart-growth initiatives in some states and changes in our federal transportation and energy laws. Transportation and land use patterns are a primary cause of almost every environmental problem facing the United States.

Despite some recent initiatives, the years since 2002 have seen reduced activity at the state level to promote sustainable land use within the context of smart growth. The Supreme Court's 2005 decision in *Kelo v. City of New London*, which held that economic development is a valid constitutional purpose when a government condemns private property, helped

provoke a backlash against land use controls, even though this issue is unrelated to smart growth.

Passenger and freight highway travel have increased rapidly, rising far faster than population or economic growth. In 2005, Congress adopted the most recent renewal of the federal surface transportation law with funding formulas that unfortunately reward unsustainable transportation patterns. On the other hand, the law continues a framework first established in 1991 that recognizes that transportation should promote energy conservation, environmental protection, and other goals in addition to mobility. In December 2007, Congress increased fuel economy standards for passenger vehicles to at least 35 miles per gallon by 2020. Even if fully implemented, this would still be significantly below the standards of a number of European and Asian nations. Rising fuel prices have spurred public demand for change and have begun to alter travel behavior.

F. International Trade, Finance, and Development Assistance

The United States has put environmental provisions in bilateral or multilateral trade agreements, increased its official development assistance, and supported a public/private partnership that effectively promoted the phasing out of leaded gasoline in sub-Saharan Africa. Sustainable development has not, however, been systematically incorporated into the major programs for international assistance and trade, nor is the clean-fuels partnership designed to address the many other sources of lead exposure additional to leaded gasoline.

Fostering sustainable development is an expressed goal of the World Trade Organization's Doha Round of negotiations. But there has been no serious discussion about the interface of trade, environment, and sustainable development since the negotiations were initiated in 2001. If the Doha Round fails, U.S. bilateral and regional free trade agreements will have to carry more of the trade/sustainable development load. The Bush Administration has concluded bilateral and regional free trade agreements with 13 countries that contain environmental provisions modeled on the 1994 North American Free Trade Agreement with Mexico, Canada, and the United States, which ensures that investments within their borders are carried out in an environmentally protective manner.

Between 2001 and 2005 the United States significantly increased its official development assistance (ODA) to developing countries, and is now the largest net donor among developed countries, although the country still ranks low among Organisation for Economic Co-operation and Development (OECD) (i.e., developed) countries in official development assistance as a percentage of gross national income. Much of the increase in U.S. international assistance is related to the Iraq War, and its effectiveness in accomplishing strategic and sustainable development objectives is in doubt.

Private financial investments in developing countries now dwarf ODA. Export credit agencies (ECAs) and multilateral financial institutions have considerable potential to influence the environmental character of private financial flows to

developing countries. In 2003, the ECAs of OECD countries (including the United States) began to require that all projects comply with the environmental standards of the host country or the standards of the World Bank Group, which are typically higher than those of host countries. Although the Group of Eight (G8) top industrialized countries asked the World Bank to take a leadership role in helping its clients address climate change, the United States has undermined the Bank's efforts to prioritize climate change in its operations.

The United States has played a constructive role in at least one international partnership that emerged from the World Summit on Sustainable Development in 2002. At the Johannesburg Summit, which encouraged the use of public-private partnerships for sustainability, EPA and the United Nations Environment Program initiated the Partnership for Clean Fuels and Vehicles, a loose affiliation of international organizations, businesses, and trade groups with the goal of accelerating the global phaseout of leaded gasoline. The partnership has been particularly successful in persuading governments to phase out leaded gasoline in sub-Saharan Africa, although many other lead exposure problems remain.

G. State and Federal Governance

States have been more active on climate change than on sustainable development in general. The federal government has imposed increasing restrictions on access to information and public participation. More generally, the federal government has done little to foster sustainability in the United States.

The record on statewide sustainable development efforts is largely disappointing. Only 10 states have readily visible and explicit statewide sustainability efforts, and most of these efforts are limited to reducing the energy and environmental impacts of state government operations. On the positive side, in the absence of strong federal leadership on climate policy, states have been filling the void with programs to conserve energy, create greenhouse gas emissions registries, promote renewable energy, and limit greenhouse gas emissions from vehicles and power plants.

Since 2002, the federal government has quietly shifted policies and practices to ones based on the public's "need to know," increasingly leaving the government in charge of determining who needs to know and what they need to know, and undermining the informed discussion required for sustainability. While the threat of terrorism is real, the Bush Administration's invocation of terrorism and national security often appears to overreach. On the other hand, the ongoing technological revolution in information, coupled with broadening access to the Internet and other telecommunications technologies, has provided new and widely used tools for informing and mobilizing the public.

The federal government has done relatively little to foster sustainable development since 2002. The United States has no overall national strategy for sustainable development, and is a long way away from employing the strategic analysis and decisionmaking required for sustainable development. The federal government has moved toward environmental indicators, but

not sustainable development indicators (which would include social, economic, and even security measures). But there has been no comprehensive effort to address the variety of sustainability threats we face, including climate change, perhaps the most urgent and obvious of all sustainability issues.

II. Agenda for a Sustainable America

The contributing authors together provide more than a hundred recommendations for the next decade. These recommendations encompass 10 basic themes, and they provide a basic map of the direction we need to go. They are:

1. *The United States should systematically reduce its ecological footprint.*
2. *The U.S. government must adopt, as soon as possible, greenhouse gas emission reduction programs that will reduce U.S. emissions to our fair share of safe global emissions.*
3. *The United States should create more employment opportunities in environmental protection and restoration, and make it easier for unskilled and low-income persons to enter and remain in the workforce.*
4. *Sustainable development should be an organizing principle for all levels of government.*
5. *Nongovernmental actors should play a major role in achieving sustainability.*
6. *Individuals, families, and consumers should have more sustainable options in the decisions they make.*
7. *Sustainable development should become a central part of public and formal education.*
8. *The United States should strengthen its environmental and natural resources laws.*
9. *The United States needs to play an international leadership role on behalf of sustainable development.*
10. *The United States needs to improve the information and data available to the public to make decisions for sustainability.*

As these recommendations suggest, sustainable development requires actions by governments at all levels but cannot be achieved by government alone. All segments of American society—individuals, nongovernmental organizations, businesses, the scientific and technological community, educational institutions, religious organizations, and families—need to play an active and constructive role. The agenda contained in this book is intended to guide or inform that effort.

The recommendations concerning government, moreover, are not about more government or less government but rather better governance. Governments at all levels make better and less costly decisions when they incorporate environmental considerations and goals in advance, rather than try to patch things up afterwards. Many of these recommendations, too, would have the government reduce environmentally damag-

ing subsidies and ensure that individuals and businesses can make more sustainable choices.

These recommendations also indicate that the task is achievable. For a wide range of activities, the contributing authors have identified steps that we can take in the next 5 to 10 years to move toward sustainability in the United States. *These are not long-range, pie-in-the-sky recommendations; these are steps we can take right now.*

And this agenda will make us better off than we would otherwise be. It will save us money, improve our security, improve the quality of life in our communities, make us healthier, create new jobs that pay well, and foster the development of new scientific and technological developments. The journey to sustainability will not be easy, but continuing our present course puts our security, economy, well-being, and environment at great risk.

The rest of this Article sets out in greater detail the 10 recommendations that constitute a roadmap for the next 5 to 10 years of the journey toward a sustainable America.

A. The United States Should Reduce Its Ecological Footprint

- **Practice energy efficiency:** Substantially tighter efficiency standards are needed for many appliances as well as automobiles, light-duty vehicles, and heavy-duty vehicles. In addition, research, development, and large-scale demonstration of energy-efficient commercial buildings is needed to prepare the way for net zero-energy commercial buildings.
- **Conserve materials:** Manufacturers and consumers should “reduce, reuse, recycle, and remanufacture” to supplement and preserve virgin supplies of nonrenewable resources. Consumer products should be made largely with recycled and nontoxic materials, should be readily recyclable themselves, and should employ the more abundant of the nonrenewable resources, such as iron and aluminum.
- **Design to reduce environmental impacts:** Manufacturers and producers should reduce the amount of material required in each product, use renewable materials for construction (such as insulation and roofing), and design to limit energy and water use as well as toxicity.
- **Phase out fossil fuels:** A movement toward phasing out oil and coal would not only catalyze the development of lower or zero-emission vehicles but also lessen dangers from air pollution and greenhouse gas emissions, as well as oil drilling, oil spills, petroleum refinery emissions, and leaking underground storage tanks. It would also improve national security by lessening our dependence on foreign oil and produce enormous health and environmental benefits.

B. The U.S. Government Must Adopt, as Soon as Possible, Greenhouse Gas Emission Reduction Programs That Reduce U.S. Emissions to Our Fair Share of Safe Global Emissions

- The United States needs to adopt both emissions caps for various sectors and a mix of financial incentives and regulatory requirements that will achieve the reductions needed to return to 1990 emissions levels within the next few years. Implementation of energy-production- and consumption-based carbon taxation or a cap-and-trade system for carbon emissions would move the entire U.S. energy system in a more sustainable direction. A carbon tax, or a cap-and-trade or fossil fuel phaseout program that raises energy prices, should be coupled with rebates paid out in the form of refundable tax credits to protect low-income families and reduce the burden on middle-income taxpayers.
- The United States should take leadership in achieving an international consensus on the levels of atmospheric concentrations of greenhouse gases that constitute a dangerous interference with the climate system. The goal of the U.N. Framework Convention on Climate Change is to stabilize atmospheric concentrations at safe levels. Definition of safe atmospheric levels would enable all nations to understand what their individual obligations would be.

C. The United States Should Create More Employment Opportunities in Environmental Protection and Restoration and Make It Easier for Unskilled and Low-Income Persons to Enter and Remain in the Workforce

- Connect waste management and pollution control to job creation. Not only has interest in recycling and composting created many jobs, but as resources become more constrained, we can expect new opportunities in key environmental industry sectors such as resource recovery for parts of the country that are ready with both investment and training for job growth.
- Replace the current welfare system with a comprehensive tax-and-transfer system. The goal is to “cash out” as many welfare programs as possible and use those funds to help pay for refundable tax credits. These refundable tax credits would simplify the current system by replacing personal exemptions, standard deductions, and the many other child and family benefits in the current income tax system.

D. Sustainable Development Should be an Organizing Principle for All Levels of Government

- State and local governments should exercise leadership on land use for sustainability. Land use planning and decisionmaking needs to be integrated with climate change. The stakes are not only regionwide and statewide; they are national in scope, particularly in regard to climate change.
- States should increase their use of areawide brownfields initiatives and integrate brownfields remediation and reuse with their existing economic development programs by addressing multiple brownfield sites in the same community.
- The federal government and state governments should systematically provide incentives for comprehensive sustainability policies for local and regional governments on a range of issues, including climate change, transportation, housing, education, energy efficiency, infrastructure reinvestment, immigration, environment, land use, pollution prevention, and regional coordination.
- States need to move toward a system that better promotes regional governance and shares taxes within a region. Through strong smart-growth laws, integrated statewide planning, and more sensible funding, the states can influence growth, encourage regional cooperation and supportive local zoning, and help end the revenue penalty suffered by low-income jurisdictions.
- Municipalities should engage in open, integrated planning that takes into account environmental, economic, and equity considerations, including climate change. They should also implement local zoning that fosters mixed-use, smart-growth development and uses the natural environment to buffer communities from natural disasters.
- State and federal policymakers should protect and enhance the role of states as laboratories for sustainability reforms. After articulating the specific goals and assumptions behind sustainable development policies, states should share data about the success or failure of their efforts. The federal government should preserve state policy innovation by avoiding federal preemption of state climate initiatives except where a direct conflict with federal law exists.
- States should develop comprehensive goals for a sustainable society and specific indicators of progress. This approach would integrate all of the societal goals of sustainability, viewing it as the means for human societal development and understanding the impact of that development on the natural environment.
- The United States should employ an ongoing and systematic sustainable development strategy. The federal

government needs to conduct an ongoing analysis of actual or potential threats (including environmental threats) to its interests, prioritize them accordingly, and develop strategies for addressing them. The federal government needs to reinvigorate its commitment to support strong and independent scientific evaluation of potential environmental threats to better inform such policy development.

- The federal government should develop a set of sustainable development indicators that cover the environmental, social, economic, and security aspects of national life. These indicators would help us better understand where we are, what we need to do next, and how the various aspects of our national life are related.

E. Nongovernmental Actors Should Play a Major Role in Achieving Sustainability

- Business leaders should develop multi-stakeholder partnerships within the framework of specific commitments made by the United States under international law. The partnerships concept embraced at the World Summit on Sustainable Development was based on the premise that such partnerships would support international agreements, not replace them. Greater public reporting on partnerships would provide a means of assessing successes and failures, as well as more external accountability.
- Business leaders should embrace voluntary reporting on their social and environmental effects or face mandatory reporting. Mandatory reporting requirements could be avoided by establishing an external verification mechanism for voluntary reports.
- Faith communities should teach the vision and values of eco-justice ethics informed by insights from natural sciences and rooted in the sacred texts of religion. The scriptural portrayal of the fifth and sixth days of creation (Genesis 1:20-31), for example, which Jews and Christians have traditionally viewed as a mandate from God for human domination of nature, actually underscores human interdependence with, and stewardship responsibility for, the vast community of diverse life.
- Faith communities should continue to emphasize that simpler living and energy-saving, earth-community-building initiatives are expected of all who claim to care for creation. Because the deepening environmental crisis is cultural as well as ecological, one of the religious communities' most significant contributions is to inspire reverence, gratitude, repentance, and self-discipline—to the benefit of earth community.
- The federal government should provide better public access to information on such topics as climate change, ecosystem services, and the newer environmental and health risks arising from nanotechnology and endocrine

disruptors. In order to protect our shared resources, or commons, and better engage in a national conversation over sustainable development, the public must have better and more accessible information.

- The federal government should adopt and implement a new generation of access principles. Federal agencies should operate under the assumption that they have an affirmative responsibility to disseminate information, which means they would need to justify any action to withhold information.
- Individuals, nongovernmental organizations, corporations, and others need to move toward sustainable development in their communities, their work, and their lives. Too much effort is needed on too many fronts for government to do it alone.

F. Individuals, Families, and Consumers Should Have More Sustainable Options in the Decisions They Make

- Public and private partners involved in forestry on both public and private land should work together to promote forest certification for wood products as a preference in consumer decisions. Forest certification has proved influential in encouraging sustainable forest management on both private and state forest land in both the United States and other countries.
- Far more effort, including funding, needs to be devoted to providing attractive, reliable, affordable alternatives to driving—including freight rail, light rail, high-speed rail, bus rapid transit, bicycling, and walking.
- Cleaner and more efficient vehicles should be encouraged or required through a variety of incentives and regulations, including even more stringent fuel-efficiency standards, tax incentives for manufacturers and purchasers of high-efficiency and alternative-fuel vehicles, government fleet purchases of efficient vehicles, and research and development grants.

G. Sustainable Development Should Become a Central Part of Public and Formal Education

- States and school districts should provide standards and capacity building for education for sustainability at the kindergarten through 12th-grade (K-12) level. More explicit support for sustainability in influential and state-mandated content and performance standards would produce widespread improvement in education for sustainability. Diverse public and private entities need to advocate for and support this effort.
- Parents, universities, business, and government should model sustainability, involve schools in their own efforts to progress toward sustainability, and advocate for edu-

cation for sustainability in our school systems. Nothing will help K-12 education for sustainability more than growth in societal demand for educational programs that equip students to create a more sustainable world and an increased funding stream to equip schools to meet this demand.

- Universities and colleges should increase and expand support for sustainability in each of the core areas of university life, including curriculum (to ensure that all students achieve basic sustainability literacy), research (to provide the knowledge needed to accelerate the movement toward sustainability), operations (“greening the campus”), outreach and service (in their communities), student life (making sustainability an integral part of campus culture), and institutional mission (integrating sustainability with strategic planning).
- External stakeholders of colleges and universities, including nonprofit organizations, businesses, and governments, should support and encourage sustainability in higher education.
- The federal government needs to embark on a pervasive educational campaign at all levels of society, including increased investments in marine science research, so that Americans will understand why their marine resources are important and how their individual choices can contribute to a sustainable ocean in the future. A similar campaign should be conducted to enhance public understanding of how human societies are dependent on ecosystem services.

H. The United States Should Strengthen Its Environmental and Natural Resources Laws

- We must invest in water resources. Although U.S. water supply and sanitation systems remain among the best in the world, many systems are aging and require significant repairs or upgrades, and growth will require substantial investments to maintain public health and other benefits. To avoid past mistakes, however, future investments should focus on more sustainable uses of land and water.
- We must control pollution runoff. Runoff is now the leading source of water pollution in the United States. A mandatory system of enforceable, best-practice standards for sources of runoff pollution would close the biggest gap in U.S. water pollution programs.
- Ocean waters must be managed on an integrated ecosystem basis. The United States needs to improve the coordination of its regulation of ocean activities and resources, preferably through a comprehensive national oceans policy that will govern all ocean activities across regulatory jurisdictions. This policy should be founded on sustainable use and a stewardship ethic,

and should mandate ecosystem-based management of marine resources.

- The regulatory system for air pollution, among other things, should be redesigned to encourage advanced technology. An environmental competition statute would authorize polluters who clean up to collect the costs of that cleanup, plus a premium, from competitors with higher pollution levels. Such a policy would stimulate a race to improve environmental quality by improving technology.
- State and federal land management agencies in the United States should affirmatively subscribe to the Montreal Process criteria as goals for sustainable forest management. These criteria include biodiversity, forest ecosystem health and productivity, maintenance of soil and water resources as well as contribution to the global carbon cycle, and maintenance and enhancement of social and economic forest benefits. Adoption of a uniform policy based on the Montreal Process criteria would both further sustainable forest management and facilitate cooperation among state and federal land management agencies.
- Congress should amend the Toxic Substances Control Act to ensure more sustainable development, production, and use of chemicals. Needed reforms include mandating stronger management of chemical risks, promoting green chemistry, enhancing the right-to-know for chemical users and the public, and incorporating scientific advances in toxicity testing and exposure assessment.
- Congress should develop a regulatory framework for the assessment and management of risks related to nanotechnology. The current EPA voluntary approach falls well short of this goal.
- Congress should amend our hazardous waste laws to require industrial facilities to decrease their generation of hazardous wastes by certain deadlines. This amendment should be designed to allow industrial plant managers sufficient time to design and implement operational changes tailored to the specific circumstances of their own facilities.
- Congress should amend the Superfund statute to remove the liability exemption for lending institutions that have the capacity to influence hazardous waste management practices at borrower facilities in which they hold a security interest. Congress should also reinstate Superfund's taxes on certain industries to replenish its trust fund and facilitate more cleanups.
- To better integrate environmental objectives with social, economic, and security objectives, the United States needs to make greater use of legal and policy tools that send appropriate economic and price signals. The United States should also reduce or eliminate environmentally damaging subsidies.

I. The United States Needs to Play an International Leadership Role on Behalf of Sustainable Development

- The United States should deepen its commitment to international agreements. Collectively, these agreements add up to a common understanding that population stability, environmental integrity, prudent resource use, and equity considerations must all be inextricably linked in any design for a sustainable human future.
- The United States should take a leadership role in bringing the Doha Round of trade negotiations to a successful conclusion. Agricultural subsidies, particularly by the United States and the European Union, have historically encouraged overproduction of field crops such as corn, cotton, wheat, and soybeans, which in turn has put pressure on natural resources, including water and arable land. A substantial reduction in farm subsidies would foster sustainable development in the agriculture sector.
- The United States should make sustainable development a priority in multilateral and bilateral trade agreements. Agreements should contain provisions for financing sustainable development as well as appropriate incentives. Agreements should also include provisions for benchmarking progress on sustainability, including economic growth and poverty reduction.
- The United States should continue to increase its official development assistance (ODA) to the extent that it is effective in achieving sustainable development goals.
- The United States should seek to ensure that export credit agencies (ECAs) adopt robust minimum standards and do not finance projects that have damaging environmental and social impacts. The ECAs need to support projects and exports that make a significant contribution to sustainable development.
- The United States should play a stronger role pressuring multilateral development banks and other global financial institutions to facilitate private-sector finance for sustainable development. The World Bank Group, in appropriate partnership with others, could provide leadership on this set of issues, and the United States is a majority shareholder in the Bank. The challenge is to make environmental protection central to long-term poverty reduction.
- The United States should support and help disseminate an updated international action plan for lead poisoning prevention. Dispersed lead continues to cross national boundaries in the form of industrial emissions and discharges, waste streams, consumer products, and cultural practices. Its impacts are overwhelmingly felt in poor and minority communities.
- The United States should help international, regional, and issue networks to incorporate best practices for lead

poisoning prevention and to link to community-based programs, international initiatives, and to each other. The United States should also help to create community-based pilot projects to achieve coordinated international solutions based on the action plan for prevention.

- The United States should ratify the Convention on Biological Diversity. Ratification would establish biodiversity conservation as an overarching legal objective in the United States and stimulate the development of a comprehensive national biodiversity conservation strategy.
- As part of an international leadership effort to better manage waste and toxic chemicals, the United States should also ratify the Stockholm Convention on Persistent Organic Pollutants, the Rotterdam Convention on Prior Informed Consent, and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes.

J. The United States Needs to Improve the Information and Data Available to the Public to Make Decisions for Sustainability

- The U.S. government should analyze its environmental resource base and develop policies to ensure that its population does not exceed the carrying capacity of environmental resources, including the ability to draw on foreign resources.
- Congress should authorize a national commission on biodiversity conservation. The commission should (1) synthesize the existing science of biodiversity conservation to develop biodiversity measurements and conservation indices so that the status of biodiversity can be tracked and the efficacy of programs evaluated; (2) survey the existing legal mandates of the major federal land management and regulatory agencies to determine how well they promote biodiversity conservation and whether revisions to those mandates are necessary; and (3) assess the role of private land acquisition in biodiversity conservation.
- A national report card should be issued on smart growth. The public needs a score card to indicate, among other things, the actual number of acres of land preserved through various smart-growth strategies, the number of affordable housing units created through smart growth and environmental justice initiatives, and the number of road trips reduced as a result of implementing smart-growth principles. Continued progress in smart growth requires measurable benchmarks.

- States should develop measures to assess progress toward sustainability for brownfields redevelopment, and implement evaluation methods to determine whether the environmental risks to public health and welfare have truly been lessened or eliminated, and whether the original problems have a tendency to recur. States should also assess whether the promised economic benefits of brownfields development are being realized.
- Interested federal, state, and local officials need to standardize their accounting methods to account for municipal solid waste, construction and demolition waste, and nonhazardous industrial waste. The absence of standardized accounting makes it difficult to know how we are doing and what we need to do.
- The United States should urge the Organisation for Economic Co-operation and Development (OECD), which defines and monitors official development assistance, to incorporate sustainable development into its definition of ODA.
- The United States needs to consider the possibility that more significant changes in governance are needed to put the country on a sustainable course. We are faced with a variety of challenges—climate change, the budget deficit, health care, and Social Security—that often seem politically intractable. A major obstacle, though certainly not the only one, is the challenge that two-, four-, and six-year election cycles pose to solving problems that will take decades to solve. The president and Congress should consider establishing a National Commission for a Sustainable America to evaluate and make recommendations on changes in national governance, including both Congress and the Executive Branch, that may be needed to address these issues.

III. Conclusion

At the conclusion of *Hot, Flat, and Crowded: Why We Need a Green Revolution—and How It Can Renew America*, Thomas Friedman writes: “We need to redefine green and rediscover America and in so doing rediscover ourselves and what it means to be Americans. We are all Pilgrims again. We are all sailing on the *Mayflower* anew. We have not been to this shore before.”

We have no experience with modern industrial societies that are sustainable, so we cannot be entirely clear about the exact destination. But the general direction is clear enough, and we have a roadmap for the next 5 to 10 years of the journey. We know what we need to do, and we also know why. As Americans, we are called to face this challenge and to seize this opportunity.