

Natural Resources, Energy, and the Environment Challenges for the 21st Century

Following passage of major environmental legislation in the 1970s, the nation made a number of gains in its air and water quality, and expressed a commitment to improved management of our natural resources. As the nation moves into the 21st century, it is becoming increasingly apparent that the current approach to natural resource use (including energy) and environmental protection may need modification to successfully address the long-term stresses affecting so many of our nation's and the world's natural ecosystems. Evidence of this stress can be found on many fronts, including depleted fresh water supplies, deteriorating fisheries, multiple energy crises, and accelerated loss of biodiversity. Similarly, the globalization of agribusiness coupled with increasing concentration in the nation's agriculture sector raises questions about whether the historic agriculture subsidy and support structures remain appropriate.

In this context, the broad, long-term challenge is determining how the nation can reconcile the desire for consumption today with the need to protect resources to sustain the future. From the available evidence, there is reason to reexamine existing programs to determine the balance between supporting the needs of today's economy with our stewardship obligations to the generations to come. Federal regulatory and economic programs, policies, and approaches devised and implemented decades ago may need to be reassessed, and new approaches, such as pricing strategies, need to be considered to ration scarce resources. Natural resource, energy, and environmental concerns are inextricably linked.

The following challenges and illustrative questions provide a framework for thinking about these issues in the future.

Land use planning practices that do not adequately consider land, water, and petroleum availability can contribute to sprawling development and a host of problems. Such practices have had a part in automobile usage reaching new highs each year, open space dwindling, air pollution becoming more difficult to control, and the reliance on imported oil continuing to climb. Likewise, population growth, particularly in arid regions of the country, may soon face a limiting obstacle—the availability of fresh water. In fact, water managers in 36 states expect water shortages to occur within the

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next 10 years under even normal conditions. In many parts of the country, drought conditions are giving an early indication of what may occur on a much more widespread basis in the future. Federal transportation and other incentive structures have played a role in current land use planning results. In this context, it may be time to examine land use planning and associated federal incentive structures to ensure that they are not having unintended consequences. Relatedly, federal natural resource allocation and usage decisions are distorted when the federal government does not charge fair market value when offering these resources for sale. Whether it be oil and gas, timber, grazing rights, or water, the federal government has a history of selling its assets at much lower prices than others or perhaps even below the cost of delivering the asset. When this occurs, the federal government shortchanges the Treasury and distorts markets for these resources.

► *Can alternative federal approaches to transportation, land management, and water policies be adjusted to better promote sustainable management of our nation's land and water resources? For example, given projected water supply shortages, is there a need to reassess the balance between urban expansion in water-scarce regions and continuance of existing crop irrigation practices? Additionally, should steps be taken to ensure that user fees commensurate with fair market value or the costs of providing services are collected when federal natural resources are sold?*

The nation's energy consumption is significant and growing. Today, according to our analysis of U.S. Department of Energy (DOE) data, total U.S. energy consumption is equivalent to about 790 billion gallons of gasoline per year, which is nearly 2,800 gallons consumed by every man, woman, and child each year. Energy consumption is expected to increase about 30 percent over the next 20 years. As a result of these ever-increasing demands, energy reliability, affordability, efficiency, and sustainability remain a concern. Not only has our nation experienced multiple energy crises, but our systems remain perpetually on the cusp of critical supply/demand imbalances. These imbalances can quickly lead to price volatility that burdens consumers and the industry and adversely affects our economy. While there are differences of opinion as to how long the nation can rely on finite fossil energy

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supplies to meet the majority of its energy needs, there seems little doubt that at some point the nation will need to transition to alternatives. Enhanced conservation could delay this transition point, but many believe that without a vision for a sustainable energy future, our nation's energy markets in the 21st century will likely continue to experience the turmoil of the past with increasing frequency. The recent collapse of the energy grid in northeastern and midwestern states and the cascading blackouts that followed, as well as the increases in gasoline and heating oil prices, may be early warning signs of more pressing problems to come. In this context, in addition to aggressively pursuing opportunities to increase production, it may be time to consider placing a similar emphasis on and investment in demand reduction strategies and development of alternative or renewable energy supplies and technologies. Preparing the nation for its long-term energy future may be dependent on an approach that adequately balances all its options.

► *To what extent are federal energy policies and incentive structures adequately preparing the nation to satisfy its energy needs over the long term? What is the appropriate balance between efforts to promote enhanced production of fossil fuels, alternative renewable energy sources, and energy conservation?*

While the nation has made great strides in improving the quality of our air and water, questions are increasingly being raised about whether the current policies, strategies, regulatory approaches, and organizational structures—that in some cases were put in place in the 1970s—will be up to the challenge of protecting our air and water quality in the decades to come. Our nation's urbanized areas are continually battling to keep air pollution in check, and the regional dimensions of air-quality problems are being increasingly exposed by concerns over the spread of pollution from coal-fired power plants and other industrial sources in the Midwest into the Northeast states. Likewise, it continues to be a challenge to restore and protect national treasures such as the Chesapeake Bay and the Great Lakes. Despite hundreds of millions of dollars being spent, efforts to restore these waters to healthy conditions are not showing as much progress as hoped. In addition, the nation faces a more than \$150 billion burden over the next two decades to repair, replace, and upgrade the nation's over 55,000 community drinking

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water and wastewater systems to protect public health. A reexamination of current approaches to address these problems may be in order to better achieve overall environmental outcomes while providing more flexibility in achieving them. The establishment and institutionalization of a science-based, widely accepted set of environmental indicators to improve the quality of air and water quality data is an essential prerequisite to evaluate alternative approaches.

▶ *Does the existing federal regulatory approach for controlling air and water pollution need to be modernized to generate improved results? In particular, can the current prescriptive “command and control” regulatory structure be changed to more cost effectively reduce pollution and better protect the environment?*

▶ *Is there a way for the federal government to implement environmental regulations more efficiently and effectively by taking into account the cumulative costs of multiple environmental regulations to state, local, and tribal governments while at the same time ensuring benefits to human health and the environment?*

It is also unclear whether current agricultural practices and the federal policies that have promoted them remain appropriate and sustainable. When federal agricultural policies were first implemented, the United States was a largely rural nation. Farming and its related federal support were the lifeblood of many rural communities. Today, the U.S. agricultural sector is dominated by a relatively small number of agribusiness giants and very large farming operations that operate globally. For example, while there are still over 2 million farms in the United States, less than 10 percent of them provide 70 percent of the nation’s food and fiber and account for the vast majority of the \$60 billion worth of agricultural exports that help sustain the sector. Federal support for agriculture exceeds \$25 billion annually. Critics question the need for this level of subsidies, which mostly go to larger producers, particularly considering the government’s current and projected fiscal imbalance. In addition, while the Congress recently passed legislation to phase out support to tobacco growers, large subsidies remain for a number of crops that are often criticized in the international marketplace as being anticompetitive. Furthermore, farming and livestock operations have become highly concentrated,

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and the associated fertilizer, pesticide, and animal waste run-off are being increasingly recognized as major contributors to water pollution. Finally, rural communities have changed as well. Farming is no longer the dominant activity in many rural communities, and many of the large-scale electrification and related infrastructure development programs are logical candidates for reexamination. Accordingly, new approaches to agricultural programs and policies better oriented to modern challenges may be in order.

▶ *Do current federal agricultural policies and programs, which largely rely on subsidies, remain relevant to the modern agricultural sector? In addition, are current policies contributing to unfair trade practices?*

▶ *Can these policies and programs be sustained? Could alternative approaches produce desired results more economically, effectively, and efficiently? For example, could the federal crop insurance program be expanded to play a larger role in the federal safety net for farmers?*

▶ *Are government supports for or ownership of energy production and electricity generation in rural areas and particular regions still necessary given fundamental changes in the past 50 years in energy market infrastructure?*

According to the combined estimates from DOE, DOD, and the U.S. Environmental Protection Agency (EPA), it could cost in excess of \$500 billion in current dollars to clean up (1) the radioactive wastes accumulated during 50 years of nuclear weapons production at DOE facilities, (2) unexploded ordnance, discarded munitions, and related contamination at current or former U.S. military sites, and (3) hundreds of thousands of Superfund and other hazardous waste sites created by private sector activities. Some of the contamination in these sites may take 50 to 70 years to clean up; at other sites, the contamination is so extensive that it may be irreversible and the site may be irretrievable. Frequently, the progress in cleaning up these sites does not meet expected time frames and the costs dramatically exceed available funding levels. For example, DOE's projects for treating and storing radioactive and hazardous waste, a by-product of nuclear weapons production at DOE facilities, are estimated to cost more than \$140 billion and could take decades to complete. Furthermore, the current

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approaches to cleaning up DOE, DOD, and EPA sites are not consistent and, in some cases, not especially efficient or effective; development of more innovative incentives and approaches may be needed. The enormity of this task, combined with the fiscal constraints facing the nation, raises questions about whether existing cleanup standards are realistic.

► *Does the current pace and cost of nuclear and hazardous materials cleanup activities at DOE, DOD, and EPA sites suggest the need for alternative approaches to address these issues? Can the nation afford to cleanup radioactive and hazardous waste sites to the standards currently being applied? For example, are there opportunities for DOE to apply risk factors, just as EPA assigns risk factors to Superfund sites, to determine the most cost-effective approach to clean up a site, possibly resulting in disposal of more waste at current sites rather than moving it to the planned underground repository?*