

## CHAPTER TWO

# America and the Environment: *The Changing Role of Government*

**E**nvironmental policy in the United States is in a period of consolidation and reinvention that emphasizes using better science to get better results at less cost, with more flexibility, and with greater public participation in the decisionmaking process.

The federal government is taking an active role in leading this effort, while at the same time maintaining its traditional role in monitoring and enforcing existing federal environmental laws. Without strong enforcement of basic standards, market-based incentives and other new approaches would have little chance of success.

The foundation of this reinvention effort is summed up in three pivotal recent reports, which provide an overall framework and goals for the near-term

future in the United States and describe some innovative new tools to reach those goals.

- *Sustaining America*, the report of the President's Council on Sustainable Development (PCSD), presents the best thinking of a multitude of stakeholders and a philosophical framework for the future. The report includes a "We Believe Statement" that summarizes the council's thinking about environmental protection over the next 25 years (Box 2.1).
- The Clinton Administration's *Reinventing Environmental Regulation* runs along parallel lines, providing many of the working policy proposals that are likely to be a focus of future environmental policymaking (Box 2.2).

### Reflections on 25 Years

*"Whether we like it or not, continued economic and population growth guarantee that environmental issues are going to become more urgent and complex, not less."*

Russell Train (CEQ Chair, 1970-73)

**Box 2.1.**

**The President's Council on Sustainable Development—We Believe Statement**

1. To achieve our vision of sustainable development, some things must grow—jobs, productivity, wages, capital and savings, profits, information, knowledge, and education—and others—pollution, waste, and poverty—must not.
2. Change is inevitable and necessary for the sake of future generations and for ourselves. We can choose a course for change that will lead to the mutually reinforcing goals of economic growth, environmental protection, and social equity.
3. Steady progress in reducing disparities in education, opportunity, and environmental risk within society is essential to economic growth, environmental health, and social justice.
4. The United States made great progress in protecting the environment in the last 25 years, and must continue to make progress in the next 25 years. We can achieve that goal because market incentives and the power of consumers can lead to significant improvements in environmental performance at less cost.
5. Economic growth based on technological innovation, improved efficiency, and expanding global markets is essential for progress toward greater prosperity, equity, and environmental quality.
6. Environmental regulations have improved and must continue to improve the lives of all Americans. Basic standards of performance that are clear, fair, and consistently enforced remain necessary to protect that progress. The current regulatory system should be improved to deliver required results at lower costs. In addition, the system should provide enhanced flexibility in return for superior environmental performance.
7. Environmental progress will depend on individual, institutional, and corporate responsibility, commitment, and stewardship.
8. We need a new collaborative decision process that leads to better decisions, more rapid change, and more sensible use of human, natural, and financial resources in achieving our goals.
9. The nation must strengthen its communities and enhance their role in decisions about environment, equity, natural resources, and economic progress so that the individuals and institutions most immediately affected can join with others in the decision process.
10. Economic growth, environmental protection, and social equity are linked. We need to develop integrated policies to achieve these national goals.
11. The United States should have policies and programs that contribute to stabilizing global human population; this objective is critical if we hope to have the resources needed to ensure a high quality of life for future generations.
12. Even in the face of scientific uncertainty, society should take reasonable actions to avert risks where the potential harm to human health or the environment is thought to be serious or irreparable.
13. Steady advances in science and technology are essential to help improve economic efficiency, protect and restore natural systems, and modify consumption patterns.
14. A growing economy and healthy environment are essential to national and global security.
15. A knowledgeable public, the free flow of information, and opportunities for review and redress are critically important to open, equitable, and effective decisionmaking.
16. Citizens must have access to high-quality and lifelong formal and nonformal education that enables them to understand the interdependence of economic prosperity, environmental quality, and social equity—and prepares them to take actions to support all three.

**Box 2.2**  
**Reinventing Environmental Regulation**

The Clinton Administration's *Reinventing Environmental Regulation* includes 10 principles:

1. Protecting public health and the environment are important national goals, and individuals, businesses, and government must take responsibility for the impact of their actions.
2. Regulations must be designed to achieve environmental goals in a manner that minimizes costs to individuals, businesses, and other levels of government.
3. Environmental regulations must be performance-based, providing maximum flexibility in the means of achieving our environmental goals, but requiring accountability for the results.
4. Preventing pollution, not just controlling or cleaning it up, is preferred.
5. Market incentives should be used to achieve environmental goals, whenever appropriate.
6. Environmental regulations should be based on the best science and economics, subject to expert and public scrutiny, and grounded in values Americans share.
7. Government regulations must be understandable to those who are affected by them.
8. Decisionmaking should be collaborative, not adversarial, and decisionmakers must inform and involve those who must live with the decisions.
9. Federal, state, tribal, and local governments must work as partners to achieve common environmental goals, with nonfederal partners taking the lead when appropriate.

- The three-volume report of the Interagency Ecosystem Management Task Force—*The Ecosystem Approach: Healthy Ecosystems and Sustainable Economies*—describes the challenges and benefits of developing a natural resource management approach focused on restoring the health, productivity, and biological diversity of ecosystems.

As these reports make clear, there are an attractive array of new tools available to support environmental protection efforts. And, as the ecosystem management task force report demonstrates, some exciting new approaches to envi-

ronmental management are available as well.

In any given environmental management or policy issue, many of these new tools are simultaneously evident. In the case of broad new approaches such as ecosystem management or Comprehensive Conservation and Management Plans, nearly all of these tools may play an important role.

### **NEW TOOLS**

New tools for environmental protection fall into four general categories: (1) decisionmaking; (2) technological inno-

vation; (3) economic systems; and (4) regulatory systems.

First, there are many opportunities to *improve decisionmaking*, including: using sound science and computer applications to improve our understanding of the environment and make the latest research easily accessible; using risk assessment and other tools to better define priorities and target high-risk areas; and encouraging public participation to build better consensus about decisions.

There are opportunities to improve the *efficiency of technological systems*, including encouraging the introduction of new technologies that reduce impacts on human health and the environment.

There are opportunities to improve the *efficiency of economic systems*, including looking for market-based systems such as emissions trading to get more benefits at less cost.

Finally, there are opportunities to improve the *efficiency of regulatory systems*, including simplifying paperwork and reducing the administrative burden on the regulated community where consistent with human health and the environment, and developing alternative performance-based strategies that build more flexibility and innovation into the system.

### **Improved Decisionmaking**

In the area of decisionmaking, three prominent new tools include: (1) the use of computers, telecommunications, and geographic information systems to assess the environment and disseminate information about the environment; (2) the

effort to assess the risks to human health inherent in contaminants and target those contaminants that pose the greatest risk; and (3) the effort to encourage the broadest possible public participation in the decisionmaking process.

In the first case, there are numerous examples of federal agencies applying sophisticated new information-gathering techniques.

- In the region around Camp Pendleton, California, a federally supported team of investigators spent two years studying biodiversity, landscape planning, and alternative futures for the region. The research strategy assumed that the major stressors causing biodiversity change were related to urbanization, including population growth and development. A computer-based Geographic Information System (GIS) was developed to describe the region, an 80 kilometer by 134 kilometer rectangle that encompasses five major river drainage basins. Analytical models used the digital data to evaluate the complex dynamic processes at work in the area and the possible impacts on biodiversity resulting from changes in land use. Future change was studied at four scales: several restoration projects, a subdivision, a watershed, and the region as a whole.

Future scenarios look at regional development to the year 2010 and to subsequent "build-out." The first scenario is based on current plans developed by local governments and Camp Pendleton. Five alternative scenarios provide a method to explore and compare the impacts of different land use

patterns on biodiversity. Alternative 1 uses the dominant spread pattern of low-density growth, while Alternative 2 uses the spread pattern but introduces a conservation strategy in the year 2010. Alternative 3 includes proposals to encourage private conservation of biodiversity. Alternative 4 focuses on multi-centered development, while Alternative 5 concentrates growth in a single city.

Models for the region's soils, hydrology, and fire also are included. Biodiversity is assessed in three ways: a landscape ecological pattern model; potential habitat models for 10 selected species; and a species richness model. Taken together, the models and various alternatives can help illuminate the risks and benefits of a range of growth alternatives for the region and provide some helpful tools for managing the urbanization process.

- The Interior Department's Office of Surface Mining (OSM) has developed an Acid Mine Drainage GIS. The system is being used as a tool to determine if acid mine drainage is likely to occur at a given location.

OSM encourages the automated sharing of digital geospatial information between state and federal agencies, industry, and the public. This shared information between the stakeholders assists in reaching a science-based consensus to identify priorities for acid mine drainage cleanup and prevention efforts.

- The Department of Energy has substantially strengthened its focus on electronic distribution of data. Nearly everything the Energy Information Administration (EIA) now produces is available electronically. EIA also has begun releasing preliminary information, based on the fact that nearly four out of five customers said they would be satisfied with an earlier release of 95-percent accurate data.

**Environmental Risk Assessment and Priority Setting.** The use and production of food, energy, industrial and consumer goods, the generation of waste, and many other activities all expose Americans to a variety of risks, both to their health and to the health of the environment. Many of these exposures are minute, and on any

## Reflections on 25 Years

*"We are now confronting, because of our industrialized society, an entirely different variety and much more insidious and complex form of pollution, namely toxics. We measure pollutants now, not in tons, but in parts per million, trillion, or quadrillion. The challenge that we've not yet been able to meet adequately is the causal relationship between a part per million, trillion, quadrillion, of a given pollutant, and its effect on our health and that of our kids. That is where a good deal of our research needs to be."*

Michael Deland (CEQ Chair, 1989-93)

given day have no discernible impact. After months, years, or decades, however, the cumulative impact of repeated exposures may result in health problems in some individuals.

Environmental risk is defined as the probability of occurrence of a particular adverse effect on human health or the environment as a result of exposure to an environmental hazard. An environmental hazard may be a hazardous chemical in the environment, but could also be a natural hazard or a hazardous technology such as a dam. Many health concerns are associated with environmental pollutants. Cancer is the best known, but reproductive impairments, birth abnormalities, asthma and other forms of airway hyperactivity, and effects on all the organ systems of the body also warrant serious attention.

In 1993, the Environmental Protection Agency (EPA) conducted about 7,500 risk analyses. About 80 percent (6,000) of these were quick "screens" to look for chemicals that required more intensive review. About 250 were major projects requiring more than four weeks of staff time. Many other federal agencies also conduct risk assessments, including the Occupational Safety and Health Administration, the National Institute for Occupational Safety and Health, the Food and Drug Administration, the Department of Agriculture, the Department of Defense, and the Department of Energy.

EPA's various statutes generally require some form of hazard assessment or risk analysis as a basis for regulation, but the statutes are fragmented and con-

tain differing requirements for how the agency is supposed to use risk information in regulations. Some laws, such as parts of the Clean Air Act, direct the agency to set standards for pollutants at levels that will protect people's health, but bar the administrator from considering the standards' cost to society. Other laws require EPA to set technology-based standards, which require no analysis of the risks posed by the pollution. A third group, including the pesticides, safe drinking water, and toxics acts, require a formal comparison of risks and costs.

Congress and the Administration have struggled to reconcile these issues over the last several years. An important watershed in this debate is Executive Order 12866, which President Clinton signed on September 30, 1993. The order states:

"In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits should be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach."

The executive order is relatively broad. It assumes and encourages a com-

parative evaluation of a range of options. The order is an internal management tool and therefore does not raise the issue of judicial review. It also requires consideration of the degree and nature of risk.

Risk assessment helps provide a foundation for the effort to focus on high-priority risks and compare benefits and costs of new regulations. For example, the 1996 amendments to the Safe Drinking Water Act eliminate the requirement for EPA to establish regulations for 25 contaminants every three years and replaces it with a requirement to examine five priority contaminants every five years to determine whether regulation is warranted. If EPA decides to regulate a contaminant and determines that the benefits of a national safety standard are not justified by the costs, it is given the flexibility to set the standard at a level that is justified while maximizing health risk reduction.

On a variety of other fronts, EPA is attempting to strengthen its emphasis on high-risk pollutants:

- In March 1996, EPA exempted 31 low-risk pesticide ingredients from registration with EPA, changing a long-standing requirement.
- In November 1995, EPA proposed a new hazardous waste identification rule that will refocus the regulatory program on high-risk wastes. This rule will exempt wastes that do not pose a significant public health threat from the hazardous waste management regulatory system. Businesses handling these low-risk wastes could save as much as \$75 million annually.
- In September 1995, EPA issued a

new policy on the frequency of inspections of wastewater discharges under the Clean Water Act's National Pollution Discharge Elimination System. The new policy will allow inspectors to reduce their visits to facilities that handle lower risk materials and have good compliance track records.

Overall, both Congress and the Administration are moving towards a greater emphasis on pollutants that pose the highest risk to public health and the environment, a stronger emphasis on cost-effective regulation and priority setting, and the use of a broad definition of risks, costs, and benefits.

**Public Participation.** There are many examples of the benefits of broad participation in the decisionmaking process, some of which are described in Chapter 1, "America and the Environment: A 25-Year Retrospective."

In addition to facilitating these processes, many federal agencies are forming partnerships with professional societies, educational institutions, and community groups to develop and implement coordinated strategies supporting environmental education.

### **Technology Innovation**

The federal government is also playing an important role in applying new technologies to environmental protection and in encouraging the introduction of technologies that prevent or reduce environmental pollution.

An interesting example of the value of technology is the recent cooperative

effort to control the sea lamprey population in Lake Erie.

Rebuilding stocks of lake trout has been particularly challenging because of losses caused by sea lamprey, which during their parasitic phase attach themselves to and feed off of trout and other predators. Sea lamprey control measures were reasonably effective from about 1970 to the mid-1980s, allowing for the restocking and recovery of lake trout. At the St. Marys River in Sault St. Marie, however, the elimination of municipal and industrial discharges into the river significantly increased water quality and enabled lamprey populations to make a comeback. By the early 1990s, the St. Marys was producing more young lamprey than all other Great Lakes spawning tributaries combined. The effect on lake trout was devastating; in 1995, the catch of wild young-of-the-year lake trout was the lowest in 10 years.

The effort to control the sea lamprey population in the St. Marys is a remarkable story of collaboration and creativity. Many people and institutions contributed to this effort:

- By about 1993, the National Biological Service (NBS) Lake Huron Station had completed development of a chemosterilant for male sea lampreys that did not affect the animal's reproductive behavior.
- By 1990, the Global Positioning System (GPS), originally developed for the military, had become widely available for nonmilitary navigation and mapping. A few years later, the Fish and Wildlife Service developed a deep-water quantitative sampling

device and GIS mapping for estimating and plotting densities of larval sea lamprey.

- During the mid-1980s, the Army Corps of Engineers developed an oil spill model to aid in contingency planning for oil containment in the St. Marys River.
- In 1994, federal, state, and Canadian agencies signed an agreement and partnership on lamprey-trapping structures with the Canadian Great Lakes Power Company and the Army Corps of Engineers power stations.

The Fish and Wildlife Service's deep-water sampling revealed that the distribution of young lamprey was very patchy in the St. Marys. With funds from the Great Lakes Fishery Commission, a small fleet of boats was equipped with GPS navigation and GIS computers to map the lamprey distribution. The Corps of Engineers oil spill model was modified for use as a lampricide model. Larval mapping demonstrated that treatment of just the lamprey "hot spots," using GPS-guided delivery systems, could provide reasonable lamprey control by treating as little as 20 percent of the river at a fraction of the cost of traditional treatment.

Trapping at the power plants at Sault St. Marie is currently removing about 40 percent of the adult lamprey spawning run. The trapped males are being chemosterilized at the NBS Lake Huron Biological Station and released back to the river. Initial findings suggest these males mate successfully with normal females and neutralize their reproduction.

**Pollution Prevention.** Pollution prevention represents an important new opportunity to get more growth with less waste. More than a dozen states have passed pollution prevention laws, and the Congress also has endorsed the approach in the 1990 Pollution Prevention Act.

State pollution prevention laws generally include pollution reduction goals, plans, facility assessments, and provisions on information and technical assistance. Many states help facilities conduct voluntary assessments to identify pollution sources. Firms then must draft plans, based on these assessments, that lay out a pollution-reduction strategy.

Some states provide technical assistance and information. In Arizona and Nevada, Resource Conservation and Recovery Act (RCRA) grants were used to set up university-based pollution prevention centers where firms can get help. Connecticut also has established a business loan program.

Other efforts also are underway to look broadly at the environmental impact of entire industrial sectors.

For example, the Great Printers Project seeks to create a business environment conducive to pollution prevention for an entire industrial sector. The project is a partnership led by the Environmental Defense Fund, Council of Great Lakes Governors, and Printing Industries of America. The team includes Great Lakes regulatory and economic development agencies, the U.S. Environmental Protection Agency, state and federal technical assistance providers, printers, suppliers, and customers.

The team analyzed regulations, permit and reporting requirements for all environmental media, barriers and possible incentives to pollution prevention, and general environmental protection. It determined what kinds of technical, financial, and regulatory assistance would be useful and how it should be provided. It examined the factors—customer demands, regulatory requirements, and access to technology and financial resources—that can lead printing companies away from pollution prevention at the source.

In July 1994, the team released its consensus recommendations. The recommendations affected everyone involved in the printing process—printers, print buyers, suppliers, distributors, government regulators, and technical assistance organizations. Implementation activities are now underway in four pilot states: Illinois, Michigan, Minnesota, and Wisconsin.

The project focuses on supporting print shops committed to furthering Great Printers principles to:

- comply with applicable environmental, health, and safety laws;
- go beyond compliance by employing the most environmentally sound practices to (1) maximize reduction of waste at the source, (2) reuse or recycle waste that cannot be prevented, and (3) maximize energy efficiency in the print shop;
- seek to continuously improve on environmental performance through periodic assessments of operations, materials, and products, and by draw-

ing on information and ideas from employees, print buyers, suppliers, and neighbors; and

- measure and report on progress.

Key components of the program include: generating customer demand to create a market for environmentally superior printing; improving access to technology and financial resources for printers; and simplifying government requirements so that printers can readily understand, meet, and exceed their environmental obligations.

For example, EPA created the Printers National Environmental Assistance Center to provide a central source of accurate and current environmental compliance and pollution prevention information for the printing industry. The center has created a World Wide Web site on the Internet to efficiently share information with printers.

### **Improved Economic Efficiency**

There are opportunities to improve the *efficiency of economic systems*, including looking for market-based systems such as emissions trading to get more benefits at less cost and developing alternative performance-based strategies that build more flexibility and innovation into the system.

**Emissions Trading Programs.** Emissions trading among stationary sources is an increasingly important regulatory tool. Under this system, a company that reduces emissions below the level required by law can receive emissions credits that can be used for higher emis-

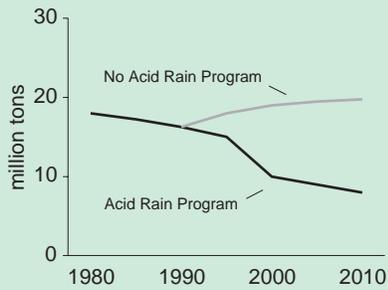
sions elsewhere. Companies can trade emissions among sources within a company as long as combined emissions stay within a specified limit. Companies also can trade emission credits with other companies that are sources of such emissions or save earned emission credits for future use or trade.

**Ozone Trading.** The current ozone control program has focused on a combination of technology-based mandatory measures and state plans that historically have discouraged flexible emissions trading programs. EPA recently issued regulations and guidance to encourage development of economic incentive programs, helped develop an emissions trading market in Southern California, and sponsored demonstration projects in the Northeast and elsewhere.

EPA proposed in August 1995 a model rule for emissions trading of smog-creating pollutants. Under this policy, a company that exceeds its required pollution reductions would have the opportunity to sell its “surplus” reductions (or “credits”) to companies that find credits a more cost-effective way to comply with these requirements. Once trading is allowed in a state plan, companies could freely engage in trades without prior approval as long as reporting and public health standards are being met.

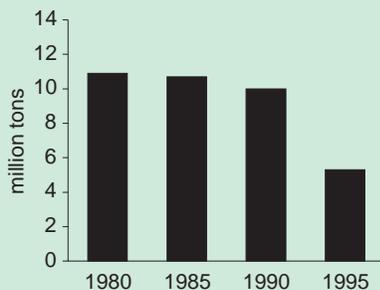
Expanding use of market-based emissions trading on a local and regional level will give companies broad flexibility to find the lowest cost approaches to emissions reductions. The rule would encourage experimentation with new trading options, including allowance-based trading systems in which total emissions are

Figure 2.1 U.S. Utility SO<sub>2</sub> Emissions, 1980-2010



Source: U.S. Environmental Protection Agency, Acid Rain Program.  
Note: Data are based on estimates and projections.

Figure 2.2 U.S. SO<sub>2</sub> Emissions, 1980-1995



Source: U.S. Environmental Protection Agency, Acid Rain Program.  
Note: Data are from 445 Phase I affected utility units whose combined emissions were 3.4 million tons below the required level in 1995.

capped, which are already under development in some areas.

**Acid Rain Trading.** The 1990 amendments to the Clean Air Act created an acid rain control program that is designed to reduce emissions of sulfur dioxide and nitrogen oxides, the primary causes of acid rain. The law sets as its primary goal

the reduction of annual SO<sub>2</sub> emissions by 10 million tons below 1980 levels (which were about 18 million tons) in the year 2010 (Figure 2.1). The 1990 amendments also set a goal of reducing NO<sub>x</sub> by 2 million tons from 1980 levels by the year 2000.

It requires a two-phase tightening of the restrictions placed on fossil fuel-fired power plants. Phase I, which began in 1995, affects 445 mostly coal-burning units in the eastern and midwestern states. In 1995, SO<sub>2</sub> emissions from these units were measured at 5.3 million tons annually, 40 percent below the required level and less than half their emissions in the 1980s (Figure 2.2). The reductions seem to be providing immediate benefits; according to a study prepared for the U.S. Geological Survey, rainfall acidity at some sites in the Midwest, Northeast, and Mid-Atlantic regions dropped by 10-25 percent in 1995.

Phase II, which begins in the year 2000 and affects over 2,000 units, tightens annual emissions limits on larger plants and also sets restrictions on smaller plants. The program affects existing utility units serving generators with an output capacity greater than 25 megawatts and all new utility units.

Under the trading program, affected utility units were allocated allowances based on their historic fuel consumption and a specific emissions rate. Each allowance permits a unit to emit 1 ton of SO<sub>2</sub> during or after a specified year. For each ton discharged in a given year, one allowance is retired and can no longer be used. Allowances may be bought, sold, or banked. In 1995, 5.3 million allowances

were deducted, which represents 61 percent of all 1995 allowances issued. During Phase II, the Clean Air Act sets a cap of 8.95 million allowances for total annual allowance allocations to utilities. This cap will ensure that environmental benefits will be achieved and maintained.

The cost of reducing a ton of SO<sub>2</sub> from the utility sector continues to decline: scrubber costs have dropped about 40 percent below 1989 levels, removal efficiencies have improved from about 90 to 92 percent in 1988 to about 95 percent or more in new retrofits, and expected increases in cost associated with the increased use of low sulfur coal have not materialized. These reductions in cost are being reflected in allowance prices, which have dropped from \$150 per ton to about \$80 per ton in mid-1996. About 99 percent of all allowance trades are processed within 5 days, and 81 percent are processed within 24 hours.

The NO<sub>x</sub> program focuses on coal-fired electric utility boilers. As with the SO<sub>2</sub> program, it is implemented in two phases (1996 and 2000), but it does not “cap” NO<sub>x</sub> emissions or utilize an allowance trading system. Utilities have two options: compliance with an individual emissions rate for a boiler or averaging of emissions rates over two or more units to meet an overall emissions rate limitation. These options give utilities flexibility to meet the emissions limitations in the most cost-effective way and allow for the further development of technologies to reduce the cost of compliance.

**Effluent Trading.** Another promising opportunity is the introduction of efflu-

ent trading in watersheds. Under an effluent trading program, a discharger that can reduce water pollution discharges below the minimum level required to meet water quality standards can sell its excess pollution reductions to other dischargers within the same watershed.

Effluent trading can allow dischargers to take advantage of economies of scale and the treatment efficiencies that vary from discharger to discharger, and it could provide an economic incentive for dischargers to go beyond minimum pollution reductions. Trading programs also could be established for other sources of water pollution, including non-point sources (e.g., runoff from farms) and indirect dischargers (companies whose wastewater is treated by a municipal sewage treatment plant).

To get the process started, EPA is developing a framework promoting different types of effluent trading and providing technical analyses of the total amount of permissible pollution in a watershed.

EPA has estimated potential cost savings for three types of effluent trading: \$611 million to \$5.6 billion for point source/nonpoint source trading; \$8.4 million to \$1.9 billion for point source/point source trading; and \$658 million to \$7.5 billion for trading among indirect dischargers.

### **Regulatory Efficiency**

Many federal agencies are accelerating efforts to evaluate existing regulations and create opportunities to attain environmental goals at lower economic costs. For example:

- The Bureau of Land Management, in cooperation with the Western Utility Group and the Forest Service, has instituted measures to streamline the receipt and processing of rights-of-way applications on public lands, including processing of applications by telephone and fax.

- At the Department of Energy, the Building Standards and Guidelines program has developed a line of products to assist in compliance with the most commonly used residential energy building energy code, the Model Energy Code. These materials give the home builder a great deal of flexibility in determining how the model codes are implemented. This allows home builders to quickly and simply substitute a more cost-effective design and still retain code compliance.

#### **Alternative Performance-Based**

**Strategies.** In March 1995, the President and Vice President proposed a series of demonstration projects designed to provide the opportunity to implement alternative management strategies for facilities, industrial sectors, communities, and federal agencies.

Under Project XL, EPA in partnership with the states will provide a limited number of responsible companies the flexibility to replace the requirements of the current system at specific facilities with an alternative strategy developed by the company. The strategy must:

- provide environmental performance that is better than full compliance with current laws and regulations;

- be “transparent,” so that citizens can examine assumptions and track progress;
- not create worker safety or environmental justice problems;
- be supported by the community surrounding the facility; and
- be enforceable.

Project XL is a response to the growing recognition that more flexible approaches involving pollution prevention can often provide substantial cost savings and enhanced environmental quality. In addition, the project promotes a more cooperative relationship between regulators, the facility, and the community.

A dozen companies and state agencies currently are participating in the program. For example, Merck and Company is pursuing a comprehensive single permit approach to control air pollution at its Elkton, VA, facility.

Department of Justice enforcement actions can sometimes also provide opportunities to foster such efforts. In some instances, each of several alternatives may be legitimate means for achieving compliance with legal requirements, but some of these approaches may provide more environmental benefit than others. To encourage the defendant to secure compliance by a more environmentally beneficial alternative, the Environment and Natural Resources Division will sometimes agree as part of a settlement to allow a longer compliance schedule in return for a defendant’s enforceable promise to install the more environmentally beneficial compliance option.

## NEW APPROACHES

In the next few decades environmental protection and resource conservation efforts are likely to move towards more holistic approaches, including either ecosystem-based management or sectoral strategies.

The ecosystem approach provides a framework for working with all stakeholders in a region to ensure the conservation of important ecological values.

As described at greater length in the chapter on ecosystems, ecosystem-based approaches present many difficult challenges. The Interagency Ecosystem Management Task Force identified several recurring barriers and opportunities that federal agencies face in implementing the ecosystem approach and in participating in ecosystem partnership efforts initiated by others. For example, existing practices are generally characterized by specific missions, stratified organizational structures, and the subdivision of problems into narrowly defined tasks. Coordination among federal agencies is hampered by procedural requirements, budget structures, data inconsistencies, traditional agency cultures, and political alliances. Taken together, these barriers

suggest that developing ecosystem-based management will be a slow process.

The goal of the ecosystem approach is to restore and maintain the health of ecological resources together with the communities and economies that they support. The inclusion of people and their economic needs is a fundamental part of the approach. The ecosystem approach should highlight potential conflicts between human activity and a sustainable environment early enough to resolve them when there are still options available, and to prevent them from becoming crises.

For example, the Clinton Administration established an ecosystem effort in the Pacific Northwest forests based on five principles articulated by the President: (1) protecting the long-term sustainability of forests, wildlife, and waterways; (2) never forgetting the human and economic dimensions of the problems; (3) making efforts that are scientifically sound, ecologically credible, and legally responsible; (4) producing a predictable and sustainable level of timber sales and non-timber resources that will not degrade or destroy the environment; and (5) ensuring that the federal government works with and for the people.

### Reflections on 25 Years

*“Why rush to save it all now? You can’t put an ecosystem in a zoo. When it’s gone, it’s gone, period. We can’t put an ecosystem back together again, at least with any method we can conceive at the present time.”*

Prof. E.O. Wilson, Harvard University

The Administration's forest plan represents an entirely new way of doing business. It includes: (1) an ecosystem-based management plan for 25 million acres of federal land in the region; (2) an economic assistance plan; and (3) a blueprint for improved agency coordination. Such a comprehensive approach was probably the only viable alternative for breaking the impasse caused by years of competition and conflict in the region.

Both the forest plan and the Administration's current approach to the groundfish crisis in the Northeast include economic assistance to those adversely affected by the new policies.

### **Habitat Conservation Plans**

Initially intended to deal with a single rare species, Habitat Conservation Plans (HCPs) increasingly are being broadened and expanded to include other rare or declining species and the habitat that supports them all. State and local governments are often involved in planning and implementation. These changes help to minimize socio-economic effects, to assure fair treatment for landowners, and to strengthen partnerships between federal and non-federal entities.

In essence, HCPs are a way to allow economic use of private lands while conserving critical habitat for at-risk species. They provide more certainty to the landowner than the traditional processes. Under the "no surprises" policy of the Secretary of the Interior and the Secretary of Commerce, landowners who develop HCPs will not be subject to later demands for more money or land to con-

serve those species, even if circumstances change. A "deal is a deal," and development can proceed without the prospect of additional mitigation requirements for covered species.

A highly visible and widely publicized example of a habitat conservation plan is under way in Orange County, California. Development pressures in the area are intense, land values are high, and the area's coastal sage scrub vegetation provides habitat for the endangered California gnatcatcher and many other species. A significant amount of this land is owned by the Irvine Corporation, which has acted as the major partner with the U.S. Fish and Wildlife Service and the California Department of Fish and Game in the development of a regional land use and conservation plan. This plan provides for sub-regional planning by landowners and local governments, with guidance from an independent state scientific review panel, and approval by state and federal agencies.

In the southeastern states, private timber firms were becoming increasingly frustrated by harvest limitations resulting from the need to protect habitat for the red-cockaded woodpecker. The companies felt that they often would not know in advance what the restrictions would be, and could not take the constraints into account in their planning. Led by firms such as the Georgia Pacific Corporation and International Paper, plans are being developed to provide much greater certainty for timber managers regarding what they can and cannot do, and where.

### **Comprehensive Conservation and Management Plans**

A number of programs authorized by the Clean Water Act—the National Estuary Program, the Great Lakes Program, and the Chesapeake Bay Program—all go beyond national pollution control standards to address a wide array of site-specific problems and consider population and development pressures as well as pollution.

The National Estuary Program, which was authorized by the Clean Water Act Amendments of 1987, identifies nationally significant estuaries that are threatened by pollution, development, or overuse.

The program is managed by EPA but emphasizes collaboration with other federal agencies, state agencies, local governments, and private citizens. If an estuary is selected for the program, EPA convenes a management conference that includes representatives of EPA, state, federal, and regional agencies, local governments, affected industries, educational institutions, and the general public.

The group's main tasks are to identify and rank an estuary's major problems and to create a Comprehensive Conservation and Management Plan (CCMP) that would reduce pollution and restore the estuary. The plan can go beyond Clean Water Act requirements and can reach activities, such as land use, that are not directly regulated under the act.

For example, the CCMP for Galveston Bay, Texas, provides a blueprint for restoring and maintaining the Galveston Bay ecosystem. Unlike traditional resource management, the plan begins

with stakeholder agreement on the problems and emphasizes an ecosystem approach to managing Galveston Bay. The ecosystem approach emphasizes the interconnectedness of bay processes. Effective solutions to the bay's problems must account for these diverse processes and operate at a systems level. Similarly, at the level of bay governance, the plan emphasizes integrated regional planning and management.

### **Sectoral Strategies**

Rather than basing environmental policy on particular environmental media or chemicals, sectoral policy looks more broadly at how specific industrial sectors generate, prevent, and control pollution. Underlying this approach is the assumption that similar sectors can identify common emissions problems and find common solutions, which can help regulators fashion improved regulations and streamline permitting.

For example, EPA's "Common Sense Initiative" is focusing on looking at all the rules applicable to air, water, land, and toxics in six sectors: automobile assembly; computers and electronics; iron and steel; metal finishing and plating; petroleum refining; and printing. Participants include trade groups, state and local regulatory agencies, national and grassroots environmental groups, and labor and environmental justice organizations.

The aim of the initiative is to look for opportunities to give industry the incentives and flexibility to develop innovative technologies that meet and exceed environmental standards while cutting costs,

and to look for ways to change the permitting system to encourage innovation. The Clinton Administration will make regulatory reform and pollution prevention a central focus of CSI.

EPA also is pursuing sector-wide enforcement agreements. For example, the Toxic Substances Control Act requires reporting of specific information on volumes of toxic chemicals released. EPA had been pursuing 51 cases involving more than 200 natural gas processor facilities for violating this requirement. In October 1995, EPA concluded an industry-wide settlement. As part of the settlement, the natural gas processing industry agreed to put in place controls that will prevent these types of violations in the future.

This settlement marked the first time EPA has worked with an industry association to develop a national agreement to successfully resolve multiple violations.

## CONCLUSION

Human history provides many examples of communities and civilizations that have collapsed after the loss of a natural

resource base. For example, the Hohokam people of Arizona built a vibrant agricultural system and watered the land with an advanced system of aqueducts, yet the Hohokam disappeared half a millennium ago because they watered incorrectly and poisoned the land with salt buildup. The name Hohokam means “those who have gone.”

Today, there are virtually no more places to go. Competition and conflict over natural resources must give way to cooperation, sharing, and maintaining reasonable and sustained uses of natural resources.

Ecosystem management, CCMPs, and sectoral pollution control strategies all provide useful new ways to resolve conflicts in constructive ways and to avoid the kinds of resource crises that have destroyed so many civilizations in the past. They recognize the dual goals of healthy regional economies and healthy natural settings.

At their best, such mechanisms fulfill the fundamental goal of sustainable development: leaving future generations with an environment and resources at least as abundant and healthy as we enjoy today.

### Reflections on 25 Years

*“The most important challenge facing mankind is exponential population growth. But I’d put right alongside of it the absence of a guiding environmental ethic. You could freeze the population at the current level, or reduce it to half of what it is, but if the culture isn’t guided by an environmental ethic, we’re going to continue to make the same mistakes.”*

Gaylord Nelson (U.S. Senator, Wisconsin, 1963-81)

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