

CRITICAL ISSUES

*Protecting the
Environment:
A Free
Market
Strategy*

*edited by
Doug Bandow*



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Library of Congress Catalog Card No. 86-82962

ISBN: 0-89195-040-0

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The Conservative Agenda

To state that the United States is becoming increasingly conservative and is re-embracing traditional values today barely elicits a protest, even from the most dedicated leftist. Public opinion polls, election results, and volumes of anecdotal evidence demonstrate that Americans have turned to conservatives for answers to the most important problems facing the U.S.

In a number of areas, conservative answers are well known and well formulated. This surely is the case regarding government regulation of the economy, the disincentives created by high taxes, and the need for a strong national defense. In other areas of pressing national concern, the conservative approach is not so well developed. Very often to be sure, conservative analysts have mounted a powerful critique of the liberal approach to a problem. There are, for instance, persuasive conservative cases made against liberal programs for the poor or civil rights or education. Less often, however, have conservatives described how they would replace discredited liberal concepts and programs with specific measures that would help build an opportunity society. While the conservative critique, therefore, is well known, the conservative agenda is not.

It is to encourage evolution of such agendas that The Heritage Foundation inaugurated a new series of *Critical Issues* publications. Inviting the participation of some of the conservative community's most creative and innovative thinkers, each *Critical Issue* examines a particular problem and attempts to go beyond critique to suggesting an agenda for action. The first of the series was *A New Agenda for Education* early in 1985, followed later that year by *Confronting Moscow: An Agenda for the Post-Detente Era*, *Banking and Monetary Reform: A Conservative Agenda*, and *U.S. Aid to the Developing World: A Free Market Agenda*. Upcoming *Critical Issues* will propose a conservative agenda for welfare and civil rights. With this volume, *Protecting the Environment: A Free Market Strategy*, The Heritage Foundation is pleased to address one of the most important matters facing the United States.

Burton Yale Pines
Senior Vice President
Director of Research

A New Approach for Protecting the Environment

Doug Bandow

A conservative revolution overtook the U.S. in 1980: Ronald Reagan was elected President, Republicans took control of the Senate for the first time in three decades, and free market ideas stormed the nation's capital. Government spending would be slashed, regulations rolled back, and the federal behemoth tamed.

The change was expected to be particularly profound in the area of the environment. Developmentalist James Watt succeeded conservationist Cecil Andrus at the Interior Department; at the Environmental Protection Agency (EPA) the centrist managerialism of Douglas Costle gave way to the conservative activism of Anne Gorsuch Burford. Most important, a President had been elected who believed that "the federal government had lost 'its sense of balance' in environmental policy."

One of Washington's nastiest political battles soon developed. Indeed, Ronald Reagan's policies reinvigorated an environmental movement that had grown complacent. Money and members flowed into conservation organizations as they sounded the call to arms. "Right now, in Washington," warned the National Wildlife Federation, the "laws and regulations which guard our country's natural beauty and health are being seriously weakened, or eliminated entirely."¹

This declaration of war between preservationists and developers occurred even though the basic philosophies of the main combatants were practically the same. Of course, the Sierra Club and the Reagan Interior Department would disagree about how much land should be owned by the federal government. And the stringency of regulations governing air and water pollution might be a matter of fierce debate between EPA and the Natural Resources Defense Council. But both sides basically believed that federal land ownership and technology-specific controls were neces-

¹Direct mail fundraising letter, undated (circa December 1983).

sary. Indeed, James Watt's chief complaint about his critics seems to be that they did not appreciate how much he did to extend the federal role. After leaving office he wrote:

While the liberal leaders of the environmental groups never criticized the cut in funding for parks during the Carter Administration, they never complimented the Reagan Administration for doubling, tripling and quadrupling those funds. . . . Nor did the environmental lobbies applaud the fact that more land was added to the federal estate for park and wildlife purposes in 1983 than in any single year since 1867, when Alaska was purchased from the Russians.²

Whether the federal government should be expanding its holdings thus has not even been an issue for the "conservative activists" in power—the question seems to be only how fast the public sector should grow.

Yet the real environmental debate should be over the appropriateness of government intervention *per se*. In a free society, how should natural resources be preserved? The approach in this century—growing out of the Progressive and liberal traditions—has been to look to public ownership and state action as the answer; the resulting command and control policies have made the government, and particularly the federal government, the key protector of the environment. An alternative conservative approach that has been gaining support, however, would be to rely on market forces and private property rights to safeguard environmental values. Such a system built on free exchange among individuals would be more consistent with the ideals of liberty upon which this nation was founded. Market-oriented policies also would be more cost-effective, providing greater protection at lower expense.

How Attitudes Have Changed

When the first European settlement was established on American soil in 1607, environmental preservation was hardly a major concern. The supply of natural resources seemed limitless. As such, the immigrants treated the environment as a free good while hewing out a nation. By the end of the 19th century, writes John Whitaker, former Under Secretary of the Department of the Interior: ". . . the damage to the land was beginning to show. Vast areas of timber had fallen victim to settlement, lumbering, and forest fires, which in turn led to soil erosion and loss of wildlife.

²James Watt with Doug Wead, *The Courage of a Conservative* (New York: Simon and Schuster, 1985), pp. 197, 41.

Market hunters had killed off most buffalo, wild turkey, and all passenger pigeons. The 1890 census announced the closing of the frontier, a symbol of American opportunity and abundance for 300 years.³ The nation's environmental cornucopia no longer seemed limitless.

The heavy consumption of resources made sense when they were abundant, but as they became increasingly scarce—and, hence, more valuable—a new approach to the environment became necessary. Had the resources been in private hands and had the legal system been capable of vesting property rights in clean air, for example, the change from carefree consumption to careful conservation might have occurred without government intervention. However, with the advent of the Progressives, federal policy shifted radically from encouraging private ownership to extending public control.

Yellowstone was established as the first national park in 1871. Twenty years later Congress passed the Forest Reserve Act authorizing the president to establish national forest reserves. The Reclamation Acts were passed in 1902, and President Theodore Roosevelt made the environment a federal priority. In succeeding decades the federal government gradually expanded its environmental role. Forest management, water resource, and soil conservation programs were established; the Army Corps of Engineers undertook water projects, such as Hoover Dam. After World War II environmental concerns turned to air and water pollution.

Yet the environmental problem only seemed to worsen. Writes Whitaker:

By 1968, the United States was choking from air pollution. Over 200 million tons of the five main classes of pollutants . . . were being pumped into the nation's air each year. Episodes of heavy air pollution in New York, in Los Angeles, and in the supposedly pristine mountain air of Denver and Salt Lake City caused genuine concern, discomfort, increases in illness and even deaths, especially among older people.⁴

Gradually a consensus developed on the need for strong, new measures to protect the environment. Symbolic of the breadth of this widespread concern was Earth Day, April 22, 1970. On January 1 of that year, President Richard Nixon signed the National Environmental Policy Act into law, establishing the Council on Environmental Quality (CEQ). Later in 1970, Nixon created the Environmental Protection Agency (EPA) and Congress passed the Clean Air Act, followed by nearly two

³John Whitaker, *Striking a Balance* (Washington, D.C.: American Enterprise Institute, 1976), p. 17.

⁴*Ibid.*, p. 23.

dozen other environmental laws in succeeding years. By the end of the decade, notes the CEQ: "... the federal government was writing and enforcing regulations affecting occupational safety and health, resource recovery, noise, water quality, air quality, pesticides, endangered species, drinking water, toxic substances, hazardous wastes, mine safety, coastal zones, ocean pollution, the outer continental shelf, and the upper atmosphere."⁵

Partly in reaction to the regulatory excesses of several administrations, the American people elected in 1980 a President who expressed a profoundly different philosophy. Ronald Reagan soon began to lighten the burden of environmental regulations, but he has not fundamentally transformed them.

The Rise of the Market Alternative

The federal command-and-control model, which steadily gained strength this century, was built on a resource economics philosophy dating from the late 1800s. The "use of natural and environmental resources is dominated by market failures," its theorists argued; the only answer was public control and professional managers.⁶ Cracks eventually began appearing in the establishment paradigm. In 1968 ecologist Garrett Hardin published "The Tragedy of the Commons." This now famous essay explained that property held in common by the public "may work reasonably satisfactorily for centuries because [use is] well below the carrying capacity of the land. Finally, however, comes the day of reckoning. . . . At this point, the inherent logic of the commons remorselessly generates tragedy."⁷ What he meant by this is that something owned by everyone is, in effect, owned by no one. The result: waste is inevitable, unless someone controls the use of the resource. This tragedy to which Hardin refers precisely fits the overuse of resources observed in America near the end of the 19th century.

Of course, someone does manage the public lands—the federal government. But Uncle Sam's record, in contrast to his rhetoric, gave conservationists, let alone preservationists, little reason to cheer. Federal dams

⁵"*Environmental Quality 1981*," 12th Annual Report of the Council on Environmental Quality, p. 9.

⁶Terry Anderson, "The New Resource Economics: Old Ideas and New Applications," *American Journal of Agricultural Economics*, December 1982, p. 921.

⁷Cited in Robert J. Smith, "Getting the Government Out of the Environment," *Inquiry*, September 1982, pp. 20-21.

destroy wetlands; federal roads promote logging in potential wilderness areas. While environmentalists had won the battle to establish public ownership of much of America's natural endowment, business had won the war by controlling access to those resources.

Over time, an alternative theory of environmental protection has emerged. Generally known as the New Resource Economics, it recognizes the efficiency of the market process. Incentives matter, goes the argument, and giving business an economic reason to reduce air emissions, for example, would help protect the environment.

Seen as particularly important in the New Resource Economics is the role of private property in internalizing costs. A timber company will clear-cut federal forest land and allow erosion because it does not have to bear the costs of the resulting damage to the property. The government, too, has little incentive to safeguard its holdings because economic value is fundamentally irrelevant to the political and bureaucratic process. In contrast, a private landowner who ignores the environmental impact of his activities will destroy a key asset and ultimately lose money. Write environmental analysts Fred Smith and Robert J. Smith: "No one acts as irresponsibly with their own resources as almost everyone does with the commons."⁸

Future costs also are internalized. As long as the right to property is secure over time, its value will include an estimate of the resources' future worth. A private owner of coal-rich land thus will leave the coal in the ground if he believes that prices will rise in the future. In this way, speculators, who buy up resources and hold them in the hopes that prices will rise, represent the interests of later generations by paying current owners and deferring consumption. There is no political equivalent of the speculator: tomorrow's generations do not vote today.

The New Resource Economics also draws on the findings of the Public Choice economists, who have analyzed the incentives of government officials and institutions and their role in making public policy. Markets may fail, say Public Choice theorists, but government is even more likely to blunder; thus, state intervention is justified only if the nonmarket response is likely to lead to a better outcome. Examples of government-promoted progress are rare, since, in practice, an iron triangle of elected politicians, career bureaucrats, and self-seeking interest groups makes government intervention inefficient and destructive.

The political process is unpredictable—electoral majorities are often ephemeral and public concern over an issue can be even more transi-

⁸Fred Smith and Robert J. Smith, "Watt vs. Peterson," *The New York Times*, September 14, 1983.

tory—making for poor conservation practices and development planning. Since the government can assert control over private as well as public resources, “the ‘worst case’ potential for destruction under the present system is virtually limitless.”⁹ In contrast, to the extent that environmental decisions are moved into private hands, the shortcomings of the political process become essentially irrelevant. Then, “even in a ‘worst case’ scenario, with a developer who, through ignorance or malice, actually does irreparable damage to his land, environmental losses would be held to a minimum—that is, to the extent of the developer’s own holdings. He would not be free to claim and destroy additional land or resources under some notion of ‘common’ ownership, or by grabbing control of the political process.”¹⁰

The free market environmental paradigm has important implications for all environmental policy.

America’s Common Pool Resources

The Problem

The quality of air and water in the U.S. has suffered greatly because these resources are the great common pools, in which it is naturally difficult for individuals to establish property rights. In 1970, as the environmental movement swept America, Congress passed the Clean Air Act. The EPA was directed to set national ambient air quality standards (NAAQS) and pollution control specifications for new polluting facilities. States were required to develop enforcement procedures—state implementation plans, or SIPs—to bring their air quality up to the national standards. And the Act set rigorous guidelines for auto emissions. These provisions were supplemented by the Clean Air Act amendments of 1977, which established new requirements for the “prevention of significant deterioration” of air quality in regions meeting the NAAQS, and set guidelines for allowing new development in so-called nonattainment areas, where the NAAQS had not been achieved.

The Reagan Administration was expected to propose major changes in the Clean Air Act when it came up for reauthorization in 1981. But because of internal disagreements, all the Administration did was release a list of eleven general legislative principles. The Act thus was extended with little change.

How well has the Clean Air Act cleaned up the nation’s air? The

⁹Smith, *Inquiry*, p. 24.

¹⁰*Ibid.*

Council on Environmental Quality (CEQ) argues that the law has “contributed to perceptible improvements in most areas of the country.”¹¹ And since 1970, most forms of air emissions have been reduced. But economic sluggishness during the 1970s and the reduction in auto travel because of the energy crisis, of course, played a major role in cutting emissions. Moreover, Robert Crandall, an economist at the Brookings Institution, has concluded that there is no clear proof that air quality improved more quickly during the 1970s than in the 1960s, before massive federal intervention, or that the Clean Air Act has reduced the absolute level of emissions.

More important, even if the Clean Air Act has reduced air pollution, emissions could have been cut more, at a lower cost, by any of several alternative approaches. The Clean Air Act’s flaws start with the NAAQS, the very underpinning of the legislation. The so-called primary and secondary standards are set to protect those persons most sensitive to air pollution, such as those with respiratory ailments, make no distinction between major and minor health effects, and allow no trade-off between marginal health improvements and economic cost. Moreover, the research underlying the standards is flawed; in almost half the cases “the wrong pollutant is being regulated.”¹²

The emissions monitoring system is a disaster. Procedures are unreliable and subject to manipulation. Application procedures for changing the legal status—and thus the relevant federal standards—of states are unnecessarily complicated and statutory timetables are unrealistic. In addition, the rigid pollution control mechanisms required by the Clean Air Act are always costly and occasionally unnecessary for meeting the NAAQS. The EPA attempts to prescribe specific abatement technologies for some 200,000 polluting facilities, yet studies consistently find that emissions could be controlled for less cost were the regulations more flexible.

In reviewing the steel industry, for example, the research firm MathTech concluded that pollution technology requirements cost Chicago area firms about \$44 million annually, more than twice what a more efficient set of controls would cost. Use of a “proportional rollback,” often used by states in nonattainment areas, would cost business twelve times as much as would a more efficient emission reduction program. This astounding cost disparity is supported by other studies as well.

¹¹“*Environmental Quality 1983*,” 14th Annual Report of the Council on Environmental Quality, p. 3.

¹²Charles Lave and Gilbert Omenn, “The Clean-Air Law Doesn’t Work,” *The Washington Post*, November 29, 1981, p. C-7.

MathTech calculated that a marketable pollution rights system, where discharge permits could be traded among polluters, would reduce current regulatory costs by up to 90 percent and still achieve the air quality goal. Economists Bruce Yandle and M. T. Maloney, meanwhile, figured that the petrochemical industry could save 86 percent of current costs if firms could buy and sell emissions rights. And other surveys, including one by the General Accounting Office, identify a comparable savings from market-oriented approaches.¹³

Perhaps the worst of the regulatory requirements is the 1977 congressional mandate that emission reductions for “fossil-fired stationary sources” (power plants) must be achieved through “technological” means. This means that flue-gas coal scrubbers must be installed, even where fuel substitutions or other measures, such as paying other polluters to reduce their sulfur emissions, would achieve the same air quality. The Congressional Budget Office estimates the annual cost of just this requirement to be \$3.4 billion.

In setting stricter technological requirements on new sources, the law perversely discourages new plant construction and creates an incentive for firms to maintain dirtier existing factories. The result, of course, is increased overall emissions. Regulations on auto emissions encourage similar inefficiencies—the law effectively requires all carmakers to meet the very stringent standards applicable to high altitude areas, even though only 3 percent of all autos are used in those areas.

Annual expenditures for air pollution controls have grown 350 percent between 1973 and 1982; the CEQ estimates the total cost of compliance for so-called stationary sources, such as factories, to be \$74.3 billion between 1975 and 1984. This does not include spending for auto emissions control systems. The Department of Commerce estimated that total outlays for pollution abatement by industry and government were \$25.4 billion in 1984 alone.

Federal water pollution regulation generally parallels regulation of air emissions. The waterways were traditionally considered an appropriate dumping ground for wastes of all kinds. The basis for current water policy is the 1972 Clean Water Act. Its long-range goal was “to restore and maintain the chemical, physical and biological integrity of the nation’s waters” by eliminating all discharges by 1985; the more immediate objective was to make waterways suitable for swimming and fishing.¹⁴ The Act

¹³Robert Crandall, *Controlling Industrial Pollution* (Washington, D.C.: The Brookings Institution, 1983), pp. 44-51, 57.

¹⁴“*Environmental Quality 1982*,” 13th Annual Report of the Council on Environmental Quality, pp. 78-79.

subsidized local treatment plants and imposed technology-specific standards for industry; firms had to install Best Practicable Technology by 1977 and Best Available Technology (BAT) by 1983. In 1977 the law was amended to extend deadlines and loosen the technology requirements for industry.

Federal regulation of water pollution has succeeded in the sense that “over the past decade the nation also made substantial progress in improving water quality by controlling large individual pollution sources.”¹⁵ But costs of compliance with the Clean Water Act have been even more than those for the Clean Air Act; the Commerce Department calculates that in 1980 government and industry together spent \$20.3 billion on water treatment. Between 1972 and 1984, estimates Paul Tramontozzi of the Center for the Study of American Business, water pollution abatement activities, including operating and maintenance expenses, cost \$205.3 billion; other estimates run even higher.¹⁶

Like the NAAQS, the national goal of “zero discharges” in waterways permits no trade-off between health risk and cost, even though the marginal expense of removing smaller and smaller amounts of pollutants from water rises exponentially. A federal sewage treatment subsidy program, moreover, induces localities to build needlessly expensive plants that often are difficult to maintain; and it discourages private polluters from adopting less expensive process changes that would reduce total emissions and reclaim higher quality wastes.

As for the mandatory plant technology controls, writes Indiana University economics professor Lloyd Orr, “. . . the very concept of issuing permits to over 60,000 point sources of water pollution with targets for future years based on best practicable and best available technology stirs notions of administrative nightmares.”¹⁷ And requiring firms to use certain equipment, instead of encouraging them to cut discharges, creates the same type of inefficiencies as in the field of air pollution.

Time for Market Approaches to Common Pools

The gross inefficiencies of the Clean Air and Clean Water Acts can be remedied only if the federal government changes its focus from input-oriented and technology-specific controls to output-oriented and general

¹⁵“*Environmental Quality 1983*,” *op. cit.*, p. 4.

¹⁶Paul Tramontozzi, *Reforming Water Pollution Regulation* (St. Louis, Missouri: Center for the Study of American Business, 1985), p. 11.

¹⁷Lloyd Orr, “Social Costs, Incentive Structures, and Environmental Policies,” in John Baden and Richard Stroup, eds., *Bureaucracy vs. Environment* (Ann Arbor, Michigan: University of Michigan Press, 1981), p. 55.

emissions regulations. That is, Washington should decide what levels of air and water cleanliness it wants to achieve (something that deserves serious review) and allow firms to meet those standards by whatever means are most efficient.

One way to make the policies more market sensitive would be to impose an effluent fee, essentially a tax on pollution equal to the marginal social cost of each additional unit of emissions. Such a value would be hard to determine, of course, but the government could experiment with different rates. For example, firms could be charged a specific fee per pound of pollutant, with more dangerous emissions taxed at higher rates; if the level of a particular effluent remained unacceptable, the relevant fee could be increased over time. The virtue of an emissions tax is that it forces firms to internalize all the costs of production, giving “firms a strong and continuing incentive to discover inexpensive ways to abate pollution.”¹⁸

A second free market device to reduce pollution of the common pools would be to establish a market in transferable pollution rights. In fact, a form of pollution rights market already has evolved. The so-called bubble concept allows a firm to add facilities and expand operations, increasing effluent levels, so long as adjustments are made elsewhere in the plant to keep total factory emissions within federal standards. Moreover, in nonattainment areas new firms can “offset” their expected levels of pollution by inducing other polluters to reduce emissions elsewhere in the region. In attainment areas, a similar procedure is known as “netting.” Some 2,500 such emission offsets have been made around the nation. Despite limitations caused by the inflexibility of the Clean Air Act, writes Neil Orloff, director of the Center for Environmental Research at Cornell University, the practice “has created markets for the discharge of pollutants, and in the process has generated incentives for companies to reduce their emissions beyond what they are otherwise required to achieve.”¹⁹

The political prospects for moving pollution control in a more market-oriented direction are problematic: environmentalists appear to support current policies, in part because they are anti-growth, while many firms seem relatively satisfied with a system that, though expensive, burdens potential new competitors the most. The social benefits of fundamental reform, however, would be enormous, given the massive inefficiencies of the current system.

¹⁸“*Environmental Quality—1979*,” 10th Annual Report of the Council on Environmental Quality, December 1979, p. 672.

¹⁹Neil Orloff, “Climbing the Pollution Learning Curve,” *The Wall Street Journal*, November 5, 1985, p. 30.

Land, Wildlife, and Water Management

The federal government is the nation's largest landholder, controlling 720 million acres, or 31.7 percent of the total. Uncle Sam's percentage of ownership ranges from 0.3 percent of Connecticut to 86.5 percent of Nevada. Most of the federal acres are managed for multiple-use purposes, including timbering, grazing, energy production, and recreation. Activities in Wilderness and National Park lands are much more restricted: recreation is the prime use, with leasing mostly forbidden.

Federal control has thrust the most sensitive environmental questions into the political arena. When everyone "owns" a property, everyone has a different opinion on how it ought to be used. In Congress, votes matter more than logic in determining where oil companies may drill and off-road vehicles run. The bureaucratic system, moreover, has its own peculiar set of rewards and punishments. Policies that embody sound management practices usually are not those that expand the agency's budget and satisfy interest groups and members of Congress. As a result, sensitive ecosystems often become merely one more bargaining chip in a government-wide game of pork barrel politics.

Examples of federal ecological mismanagement are legion—and inevitable as long as the land is held in common, so that benefits are collected by a few but the costs are shared by all. America's national park system, for example, is overcrowded and deteriorating. A step toward upgrading the system would be to raise entry fees for visitors to prices closer to market levels.

More fundamentally, the federal government should privatize the park system. Washington could start with an experimental program by auctioning off a few small refuges to profit-making firms or giving them to environmental groups. In either case, park operations would improve: private managers would have an economic incentive to protect their assets and could make decisions free of political interference.

Wetlands are among the most sensitive of ecosystems; they essentially are areas covered by a shallow layer of standing water. About 458,000 acres of wetlands are destroyed every year—thanks in part to the favorable tax treatment of water diversion projects and to agriculture subsidies that encourage farmers to drain and plant otherwise uneconomic land. Federal water projects also contribute to the problem. North Dakota's Garrison Diversion Project, for instance, is a \$1.2 billion boondoggle designed to reroute water from the Rockies in Montana to North Dakota, eliminating in excess of 70,000 acres of wetlands in the process. The cheap irrigation water would benefit just a handful of North Dakota farmers who own less than 1 percent of the state's agricultural land.

Imposing a market test on such government operations would eliminate federal subsidies for wetlands despoliation; no private firm would underwrite a project as wasteful as the Garrison Diversion. And more flexible pollution regulations would encourage private firms to maintain wetlands habitat under their control. Tenneco, for instance, has reached an agreement with federal and state agencies that allows it to “bank” credits for environmental improvements on its Louisiana wetlands holdings that may be used to meet regulatory requirements on other projects. At the same time, private interests—currently some 500 different land trusts maintain more than three million acres of mostly wetlands—would continue to protect sensitive ecosystems.

The National Forest System is made up of some 190 million acres; the Bureau of Land Management manages a much smaller forest holding. Throughout this vast expanse, the federal government subsidizes what turns out to be the uneconomic harvest of trees across America by building roads into forest areas, conducting surveys, and otherwise maintaining the land, even where it makes no sense to harvest trees. In 1983 the taxpayers got back a mere two cents for every dollar they invested in lumber leasing in Alaska. Overall, the Congressional Research Service estimates that the nation’s public forests ran a net deficit of \$2.1 billion between 1975 and 1984.

Not only does Washington waste money leasing timber land, the government also harms the environment. Complains Wilderness Society vice president Paul Emerson, “Wildlife, habitat, clean watersheds, opportunities for discoveries in genetics and other sciences, solitude—all are foregone” as a result of subsidized lumbering.²⁰ Here, again, the most effective way to prevent subsidized environmental degradation is to privatize the land; no lumber company would intentionally lose money timbering and simultaneously reduce the environmental amenity value of its land. Instead, the companies would leave such land undisturbed or conduct lumber operations in a way to preserve its other values—for hunting, for example. Not surprisingly, the companies helped block a Reagan Administration proposal to sell off even a small portion of Forest Service holdings. So long as the forests are in federal hands, the companies benefit from the road building and research paid for by the public.

The Bureau of Land Management (BLM) also administers 170 million acres of rangeland and issues leases to some 21,000 different livestock owners who graze roughly 4.5 million cattle and sheep on public lands.

²⁰Speech by Paul Emerson at Political Economy Research Center conference, September 19, 1985.

(The Forest Service leases millions of acres for grasslands to an additional 16,000 operators under similar terms.) Yet the BLM estimates that 83 percent of the federal range is in “less than satisfactory” condition and figures that its property will continue to deteriorate, losing as much as a quarter of its productive capacity in the years ahead.

This should come as no surprise. The government runs its rangeland as it does its parks—charging extremely low fees. Much of the federal land is leased at \$1.35 per month per animal, even though a recent government study estimates the average market rate to be between \$6.53 and \$6.87; leases on better quality private lands run as high as \$12.50.

As with the Forest Service, the BLM loses money. Grazing fees yielded only \$23 million in 1984, while administration of the rangeland, according to Department of Interior economist Robert Nelson, costs the government between \$100 million and \$200 million annually.

Here, again, the problem is the alliance between public land managers and interest groups. The best way to reverse grassland deterioration is to sell the property. Private rangeland is in better condition than public holdings for the same reason that private housing is in better shape than public housing. If private owners do not maintain their property, they have to bear the cost of its deterioration. At the very least, grazing fees should be raised to market levels.

Some 82 million acres of land are part of the Wilderness Preservation System, and Congress is considering expanding these holdings. The bulk of the wilderness is most valuable as it is—undeveloped. The U.S. Geological Survey, for instance, estimates that only 2.7 million acres of wilderness land have a high probability of being good oil drilling sites. Nevertheless, political pressure remains great to open these areas for development, since private firms do not bear the cost of degrading the land. In at least one case, the government has “undesignated” wilderness land, and the Forest Service is using its road-building program to remove property from being considered wilderness. The land would be better protected in the hands of environmental organizations.

Private ownership also would be more productive for society in the case of acres with good energy and mineral deposits potential: only a private owner, who receives the benefits of minerals production and pays the price for environmental degradation, has the incentive to make the best decision on whether or not to lease. In fact, some environmental groups, such as the National Audubon Society, allow oil and gas production, with stringent environmental controls, on their own wildlife preserves.

Wilderness land could be sold or simply given to environmental groups such as the Audubon Society. A less radical reform would be to maintain

public ownership of the land but have an independent Wilderness Endowment Board manage the holdings.²¹

Private ownership also offers a solution to wildlife preservation. Instances of official concern over, for example, the diminishing grizzly bear population, which led officials to close about 14 percent of Yellowstone National Park, are far outweighed by such practices as subsidized clear-cutting in federal forests. And this is unlikely to change so long as environmental decisions are political decisions—after all, more ranchers than deer are registered to vote.

In contrast, both philanthropy and profit have moved the private sector to protect wildlife and sensitive ecosystems. During the 1970s, preservation groups acquired more than 1.6 million acres of land, while individuals and businesses, too, have promoted wildlife increasingly to make money. The Deseret Ranch in Utah, for instance, manages deer and elk on its property, where it then sells hunting rights. The International Paper Company has a similar program in Texas.

Roughly half the U.S. population relies on ground water as its primary source of drinking water. Yet so-called overdrafts, where water is pumped out more quickly than it is replaced, pose a serious problem in 35 of the 48 contiguous states. While the U.S. has abundant surface water resources, it is not uniformly distributed; 17 of 106 subregions suffer from potentially inadequate supplies. The problem is particularly acute in the arid southwest. The fundamental problem is government. Water prices have been kept below true market levels; as a result, water is wasted, leading to shortages.²²

Resolving this requires two market-oriented steps. First, consumers should pay the market price for their water. Between 1960 and 1976, government-controlled water prices fell in real terms in 57 percent of cities surveyed. Simply raising prices would reduce waste.

Second, water rights should be made transferable. For example, most growers in California's San Joaquin, Central, and Imperial Valleys pay from \$6.50 to \$91.30 per acre-foot for water from federal water projects that costs \$50 to \$300 per acre-foot to supply. As a result, farmers waste water and grow crops that are not economic. If, however, those who value the resource more highly—particularly consumers in the Los Angeles

²¹John Baden, "Let Environmentalists Manage Wilderness Lands," Heritage Foundation *Backgrounders* No. 461, October 1985. Richard Stroup and John Baden, "Endowment Areas: A Clearing in the Policy Wilderness?" *Cato Journal*, Winter 1982, pp. 691-708.

²²Terry Anderson, *Water Crisis: Ending the Policy Drought* (Washington, D.C.: The Cato Institute, 1983).

basin—could purchase the water from the current users, farmers would sell their supplies rather than waste it. The growers would reap a financial windfall, but still the consumers would be better off.

The fundamental cause of much of the nation's resource mismanagement, water and otherwise, is ill-considered government intervention; all too often environmental abuse or resource waste is subsidized by those who are supposed to be the environment's protectors. In these cases, privatization and market pricing are the answers.

Toxic Wastes

Some 55,000 different chemical substances are used commercially in the U.S.; 98 percent of them pose no serious risk. Nevertheless, such well-publicized toxic debacles as New York's Love Canal have panicked the public into thinking that it faces a chemical deluge.

There are 22 federal laws regulating toxic waste disposal. Among the most controversial is the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, known as Superfund, which created a \$1.6 billion fund to help clean up dangerous disposal areas. The EPA has placed 851 sites on its National Priority List (NPL), which qualifies them for federal subsidies. The EPA expects the number of NPL sites eventually to reach 2,000. Other observers, such as the Office of Technology Assessment, predict that figure eventually to be far greater.

Predictably, the Superfund's super-regulatory approach has created its own set of environmental problems. For all the money spent so far, progress has been slow; work has begun at only 132 sites and has been completed at only six. The Superfund legislation, by expanding liability beyond the traditional grounds of fault and causation, actually has hindered efforts to get private parties to clean up waste dumps. In particular, spreading liability by assessing blameless parties has perversely reduced the sanctions on negligent dumpers. Moreover, chemical firms and dump operators are finding it difficult to get insurance coverage, which would fund cleanup efforts, because of the unjustifiably broad liability provisions.

The revenue mechanism, a special tax on the petrochemical and oil industries, gives culpable parties no incentive to be more careful. And the Superfund has become the ultimate political "free good," with Washington picking up 90 percent of the tab. Localities traditionally have handled such problems as contaminated water supplies. Now, understandably, they are demanding comprehensive cleanup projects, irrespective of the health threat or cost involved.

Countering the threat posed by toxic wastes is one of the costs of living in a technological age. Congress should reshape Superfund, however, to meet the goal of environmental protection rather than pork barrel politics.

The program should emphasize research to determine the true dimensions of the problem. Remedial efforts should focus on holding responsible private parties liable for contaminated sites and change the legal rules to restrict liability to genuinely negligent parties.

Moreover, the federal cleanup program should be limited in scope; the Office of Technology Assessment doubts that increased spending can significantly improve the situation for a number of reasons, including too few trained personnel and inadequate cleanup standards. Superfund should be restricted to dangerous “orphan” sites, where no responsible or solvent party can be held liable. Finally, the federal government should step in only when state and local governments are unable to fund the necessary cleanup efforts and the dump poses a significant health hazard.

Reconciling the Free Market and Conservation

Free markets and environmental protection traditionally have been viewed as mutually exclusive: in the public’s eye, at least, it is the profit-seeking big business that threatens the nation’s ecological future. Yet in case after case, the real enemy of the environment has proved to be government.

Consider the case of the 250 environmentally sensitive barrier islands running along the Atlantic and Gulf coastlines. One of America’s most beautiful and fragile ecosystems, the islands are subject to flooding and severe erosion. Yet for years the federal government provided insurance and construction subsidies that encouraged island construction; the number of developed acres in the system grew from 90,000 to 280,000 between 1950 and 1980.

Pushed by the Reagan Administration, Congress cut off flood insurance in 1981, and then passed the 1982 Coastal Barrier Resources Act, halting all other federal development subsidies. These changes, according to economist John Baden, force “those who want to live in the affected areas to pay the full cost, two or three times higher than living inland.”²³ Taxpayers have saved more than \$11 billion, and environmentalists have saved the islands. In this case, as well as in efforts to protect air quality

²³John Baden, “Clark’s Opening to a New Environmentalism,” *The Wall Street Journal*, January 5, 1984, p. 22.

and manage wilderness lands, there really was no conflict between the free market and ecological preservation.

The Reagan Administration has unnecessarily polarized the environmental debate, but the issue is more important than today's personalities. The Council on Environmental Quality estimates that total pollution abatement expenditures of all kinds will amount to \$710.7 billion (in 1978 dollars) between 1978 and 1987. Policy makers can no longer afford to ignore policies that offer better protection for less money.

What are the prospects of achieving a reconciliation between free marketers and conservationists? Hostility between developers and environmentalists remains high. Yet, away from the public eye and the politically charged atmosphere of Capitol Hill, industry and environmentalists are cooperating. Example: a coalition of businesses and conservation groups has formed Clean Sites, Inc., a nonprofit group to help clean up toxic waste dumps. And in late 1985, environmentalists and oil industry representatives sat down to negotiate potential offshore leases in an attempt to avoid the prolonged litigation that occurred throughout the 1970s; a similar undertaking by Energy Fuels Nuclear, Inc., previously succeeded in gaining agreement from environmentalist organizations, including the Sierra Club, to exempt from wilderness protection some Arizona lands with high-grade uranium deposits.

The best way to build upon such isolated instances of comity is to move environmental policies out of public hearing rooms around Washington and into private conference rooms across America. For political and bureaucratic institutions are at best unpredictable allies in the struggle to protect the environment. At worst, the government is an active despoiler of sensitive ecosystems from the Atlantic coast to the Pacific northwest.

In contrast, designing environmental policies around natural market forces—which would be a real conservation revolution—would deliver more ecological amenities at lower cost. Though the specifics of problems such as polluted water and toxic wastes vary, the solutions to both could be greatly improved by using the economic incentives that provide so well for a nation of 240 million. For instance, the federal government should:

- Move away from detailed “command and control” regulations, which mandate the exact technology firms must use to limit air and water emissions. Instead, a system involving per pollutant fees or marketable rights to emit a certain level of effluent should be developed, which would reduce the cleanup cost and give business a continuing incentive to reduce emissions.
- Impose realistic prices for access to government-controlled resources,

such as parks, grazing land, and water. This sort of subsidy for powerful interest groups encourages overuse, harming not only the taxpayer but also the environment.

- Drop uneconomic projects, like building roads in forests and chaining rangeland. Such resources should be developed only where the overall benefits exceed the total costs, including environmental deterioration.
- Privatize federal land, where possible, either through sale to private firms or conservation groups. Removing property from the public domain would both reduce the vulnerability of the resource to everchanging political majorities and force organizations and individuals to bear the costs as well as the benefits of development.
- Strengthen the legal liability of negligent individuals and business for violations of environmental laws, such as toxic dumping. In particular, the present Superfund should be reformed so that it no longer dilutes private responsibility, which has both reduced the pressure on firms to safely dispose of wastes and delayed cleanup efforts by promoting needless litigation.

The vaunted Reagan Revolution has essentially passed by the issue of the environment, even though the Reagan Administration's philosophy applies no less to the environment than to the economy. Unfortunately, however, the Administration has squandered numerous opportunities to promote a new approach to environmental protection. It is not too late to advance a conservative ecological program that provides more value at less expense. And that is a result that should please all Americans, industrialists and environmentalists alike.

Environmental Protection Under Reagan: What Went Wrong

Nolan E. Clark

Even before Ronald Reagan took the oath of office in 1981, environmental groups were sharply critical of the new President. And during Reagan's first term, criticism increased. Environmentalists charged that the Administration was leading an "attack on the environment"; Anne Gorsuch, the Administrator of the Environmental Protection Agency (EPA), and James Watt, the Secretary of the Interior, were both forced out of office. The popular perception was that the Administration's policy was ignoring legitimate environmental concerns.

While this perception is invalid, it is understandable that it is widely believed. Ronald Reagan's conservative revolution offers more protection to the environment than the methods used in the past two decades, but Reagan policy makers have never really applied conservative principles to environmental issues. Thus while it is true that Reagan Administration environmental policies by and large have failed, it is not true that free enterprise, market-oriented approaches to environmental protection have failed. Rather, they were never tried. In failing to do so, the Reagan Administration has undermined, perhaps fatally, a political alliance for a market-oriented environmental program. Opportunity knocked, but was not invited in.

This leaves a very dangerous legacy.

There is a serious danger that the American people, out of discontent with the Reagan environmental record, may conclude that environmental pollution can be controlled only by a pervasive and swollen bureaucracy cranking out burdensome regulations. Given such a stark choice, Americans might opt for heavy-handed government environmental regulation. Indeed, in reaction to the perceived laxness of the Reagan Administration's conservation record, Congress may yet enact an orgy of environ-

mental legislation, swelling the size of the EPA and magnifying the regulatory burden on this country.

Opportunities

Federal environmental laws are enacted by Congress, interpreted and enforced primarily by the EPA and, to a lesser degree, the Department of Interior, and subject to review by the courts. Each of these three branches of government is constrained, in varying degrees, by public opinion, intellectual currents, and political pressures. The configuration of these forces at the beginning of the 1980s made a market-oriented environment approach feasible.

Public concern about the environment rose in the late 1960s, peaked during the early 1970s, and has since declined. In a 1965 Gallup poll, respondents were given a list of ten national problems and asked to select the three that needed the most government attention: reducing air and water pollution ranked ninth, a few percentage points ahead of beautifying America. When the same question was asked five years later, shortly after "Earth Day," concern about pollution had skyrocketed to the number two position. In a similar poll in 1980, however, unemployment had risen to second place while the environment had dropped to sixth.

A number of factors led to the dramatic rise in concern about the environment during the 1960s. In some areas environmental problems were obvious; cities as diverse as Los Angeles, New York, and Denver experienced serious air pollution, and raw sewage flowed into some rivers. Most people also became aware of environmental problems that appeared to be even more menacing: mercury poisoning in fish in Japan; killer smog in London; the threat of a "*Silent Spring*."

By 1970, the concern about the environment approached the level of hysteria. Earth Day captured nationwide attention, provided a focus for the media, and spurred a growing public awareness. But a decade later, the situation had changed. Congress had passed a flurry of environmental legislation, and the most obvious problems of air and water pollution had eased. Perhaps more important, other issues had eclipsed the public's concern about the environment. Faced with double-digit unemployment and inflation in 1980, the electorate understandably voted for a candidate who placed more emphasis on reducing spending, taxes, and regulation than on protecting the environment.

When Ronald Reagan took office there was, admittedly, no intellectual groundswell for reducing environmental protection. But numerous commentators were arguing that the environmental regulatory program, as it

had evolved in the 1970s, was too costly and not cost-effective. There was widespread acknowledgement that millions of dollars spent in the name of environmental protection had been wasted.

The change in the intellectual climate between 1970 and 1980 was based as much on practical factors as on theory. After almost a decade of appraising the consequences of federal environmental regulation, the flaws in the regulatory approach were obvious. Command and control directives clearly were not cost-effective. The government-imposed cost per unit of pollution control varied dramatically from industry to industry. In some cases, pollution control standards were indefensible, and in others, the wrong pollutants were being controlled. And it was increasingly evident that environmental control legislation often was designed more to protect jobs in specific industries than to protect health or the environment. By the time Ronald Reagan moved into the White House, therefore, support for market-oriented approaches to environmental protection was widespread in academia and public policy institutions.

The political prospects for change also were good. All that was needed probably was the leadership to demonstrate the new model for protecting basic environmental values at a reduced cost. Industry was aware of the high costs of the regulatory approach and anxious for relief, environmental groups were on the defensive, and popular concern about the environment declined as the costs of regulation increased. Congress was not about to scrap the basic national program for environmental protection, but it was ready to adopt real reforms.

There also was pressure on the federal government to change its policies regarding the use of public lands. The Western states had launched their "sagebrush rebellion" in protest over Carter Administration policies. And many Americans were irritated that orderly development had been stifled in the name of conservation. Western politicians responded by calling for the federal government, the landlord of much of the West, to turn federal lands over to the states. In 1980, with a westerner elected President and the Republicans in control of the Senate, observers expected changes in the administration of public lands.

Lost Opportunities

Just three years later, by the beginning of 1983, the opportunity for a market-oriented approach to environmental protection had vanished. Anne Gorsuch Burford at EPA and James Watt at Interior had both resigned under fire. Environmentalists and Democrats had the Reagan Administration on the defensive, castigating it as anti-environment. The

environmental lobby was reinvigorated, awash with money, and enjoying greater political clout. Business was in retreat, and Congress was considering legislation to mandate new environmental regulatory controls.

What went wrong? It is widely said that the Reagan Administration, leading an attack on the environment, acted contrary to the popular will and that EPA and Interior suffered from incompetent leadership. That is debatable. What is irrefutable, however, is that the Reagan Administration simply lacked a positive agenda. Indeed, it is no exaggeration to state that the Administration had no environmental program at all. Environmental policies were influenced almost solely by Reagan's basic four-point agenda: increase defense capabilities; reduce nondefense outlays; deregulate; and cut taxes. These policies were urgently needed. But in terms of the EPA, they simply translated into cutting the agency's budget and scaling back its regulations. For the Interior Department, the emphasis was on decreasing regulation and increasing the leasing of land for mining and drilling.

Aside from the four general principles, however, there was no coherent environmental strategy. The White House left the responsibility for developing and applying environmental policies to others in the executive branch. These duties rested primarily on the EPA and the Interior Department, though the Office of Management and Budget (OMB) was to play an important supporting role. With lack of central direction, the course of events at Interior and at EPA proceeded in very disparate ways.

Market-Oriented Policies at Interior

Unlike many of Reagan's political appointees, James Watt assumed his position with a clear vision of what he wanted to accomplish and how he intended to do so. Watt earlier had labored for more than a decade at Interior and knew the agency well. He also had watched the Carter Interior Department stifle economic development by blocking offshore leasing and tying up wilderness lands. As Secretary of the Interior, Watt intended to promote multiple uses of public lands and open up additional lands for oil drilling, coal mining, and mineral development.

The opposition was well known to the new Secretary, and he had a distinct personal view of it. The professional environmental organizations that staunchly opposed his policies were seen as the enemy, and Watt was prepared to battle the "environmental extremists" that he felt blocked economic growth and development—and thus endangered the nation's well-being. Watt also believed that he had to control the Department to achieve his objectives. He had to run the career staff, he maintained, or it would run him. To keep the initiative, Watt quickly brought in his team of political appointees and defined the agency's agenda. He gained control

of the Department, won the respect of the career staff, and promptly set forth to implement his objectives, despite the barbs of cartoonists and attacks by environmentalists.

Part of the Watt agenda was quite consistent with a free market approach. He proposed, for instance, to increase user fees in national parks and to allow greater leeway for market determination in the selection of drilling sites. Both proposals encouraged more efficient use of resources.

In addition, two of the Administration's general positions seemed to provide a foundation for market-oriented policies regarding the use of federal land. First, Reagan believed that federal ownership of huge stretches of land was contrary to the federal system, in which power should be exercised at the lowest feasible level of government. And second, Reagan favored privatization—the shifting of government responsibilities to the private sector. The logical application of these two principles would have meant a large-scale transfer of federal lands to private parties.

The Reagan Administration did develop a modest proposal to sell off excess and unused federal lands. But it was seen primarily as an attempt to raise revenue. A Property Review Board was established to target public lands for sale, and Administration officials said that up to 5 percent of the federal lands might be placed on the auction block. This proposal, however, quickly lost steam for lack of political support. Mining operations wanted increased access to federal lands, but were not particularly interested in buying the land to acquire mining rights. Ranchers enjoyed the low-cost availability of federal grazing lands and did not want to pay market prices for the land. Recreational interests expected free land to be available for fishing, hunting, camping, backpacking, and similar uses. And environmental groups did not want to have to buy land to preserve its scenic beauty and to protect wildlife.

Thus private interests, whether environmental or developmental, simply had no interest in buying public lands when they could achieve their desired goals in a less expensive manner—as they could with federal ownership. Land use issues that might have been resolved in an economic marketplace instead remained in the national political marketplace. This meant that only strong political leadership could reconcile the competing interests to produce a program employing federal land in its highest and most valued uses while protecting the environment. The Reagan Administration failed to offer such leadership.

The decisive factor in the land policy debate was Watt's lack of interest in a framework to further private property rights and economic incentives. Watt apparently considered such a framework politically irrelevant.

He was not so much interested in selling federal lands as he was in opening additional federal land for development. The Secretary was not anti-environment, and his programs never posed a significant threat to environmental interests, but he probably would have allowed development on as much federal land as possible.

Even with his decidedly unradical goals, Watt knew that he would be controversial and was prepared to fight. But he was no match for the media and the unique political culture of Washington. Consistently negative press coverage slowly sapped his position.

By the time that Watt left Interior, he had opened some public lands for development. He had not, however, implemented a market approach for determining land use. That had never been part of his agenda. James Watt's tenure at Interior, therefore, was simply not a test of free enterprise environmental protection policies.

Market-Oriented Approaches at the EPA

Anne Gorsuch Burford's tenure at the EPA began in strikingly different form than Watt's at Interior. Watt had a positive agenda and a management team; Anne Gorsuch had neither.

Under Watt's tutelage, Burford had absorbed two basic lessons: "environmental extremists" were the enemy, and tight control over staff was essential. To protect herself, Burford kept her distance from the enemy.

Lacking distinct goals of her own, Burford promptly embraced the agenda that had been defined by the Office of Management and Budget (OMB). David Stockman had assumed his position as OMB Director with a strong aversion to the EPA, resulting from his service as a member of the House Committee overseeing the agency. He was determined to cut EPA's budget and reduce its plethora of regulations. Central to his agenda was a list of regulations and regulatory programs to be reevaluated. Regulatory relief was the dominant theme with budget cuts a close second. During the summer of 1981, OMB sent initial budget targets to EPA that called for a 20 percent reduction in the EPA budget.

Budget cuts and regulatory relief were feasible and desirable, but they did not form an environmental agenda. More important, they did not provide for any fundamental change in the federal role. Budget reductions and regulatory modifications are reversible. Changes made by the Reagan Administration could be undone easily by a later administration.

This strategy of cutting spending and regulations without changing the underlying regulatory philosophy proved counterproductive. OMB's proposed budget appeared to be little more than an attempt to starve EPA, weakening the agency's ability to carry out its statutory mandate. A

counterattack from environmental groups resulted in a campaign to "Save the EPA." Scaling back regulations provided short-term relief to individual businesses, but the price of doing so was high. The Administration appeared to be catering to the wishes of business with little regard to the effect on the environment.

Even worse, the program of regulatory relief was unsound, in that it shared the underlying approach of the existing regulatory programs. Under Burford, command and control regulations remained the order of the day; the only major difference was the degree of cleanup to be achieved and the level of pollution control technology required.

Flawed as it was, the OMB agenda was not of itself a formula for disaster. Within its framework, the EPA Administrator could have developed a coherent environmental policy. She had considerable leeway to propose legislation or introduce administrative changes that would have moved policy toward a market orientation. She apparently lacked the vision to do so. Her few objectives were primarily managerial and procedural, rather than substantive. She wanted to streamline regulations, reduce permit processing time, meet deadlines, and apply "good science." Though worthy, these goals provided no positive direction for the agency.

Burford was not anti-environmental. On the contrary, she was very much committed to protecting the environment. As with most environmentalists, she had little use for market-oriented approaches to environmental protection, and she believed in the philosophy of command and control. Her dispute with environmentalists related to the level of protection to be afforded, not the means to achieve that protection.

Burford's antipathy to market-based solutions was revealed during EPA's consideration, in 1981, of proposed amendments to the Clean Air Act. Staff economists supported legislative changes that would have permitted companies constructing new plants to purchase pollution rights from other firms rather than employ the most stringent technology available, when a voluntary exchange provided a more economical means of achieving the same level of cleanup. This would have guaranteed the greatest reduction in air pollution possible at the lowest cost, as old plants were replaced by new, cleaner plants.

Burford refused to consider such a proposal, preferring instead to impose strict technological requirements on all new plants. Her position was typical of the environmentalists who pushed for the strictest possible rules for new plants. Such a policy is extremely costly for firms. Worse, by increasing the cost of new plants relative to old ones, the law simply discourages the construction of new plants. The result is more pollution rather than less, together with slower innovation and economic growth.

Despite the similarity of their preference for bureaucratic rather than market approaches, Burford and the environmentalists were on opposite sides on most issues. The reason was simply that they perceived the world differently: the environmentalists saw problems where Burford saw none. She genuinely believed that most of the major environmental problems had been solved, in fact oversolved. Only the cleanup of hazardous waste still required federal action, and she intended to find a solution for that as well.

Despite Burford's rejection of market-based solutions to environmental problems, the EPA under her direction took one major step to strengthen a system of environmental property rights that had been created during the Carter Administration. The Carter EPA had established the principle of the "bubble," whereby regulations applied to the total emissions from a plant, rather than the emissions from each component. If a firm managed to exceed the required level of cleanup in one part of its plant, this excess could be used as a credit to offset deficiencies in another part of the plant. This enabled firms to bring the total pollution they caused down to the permitted level in the least costly way. Under Burford, the EPA expanded the bubble concept, allowing firms to "bank" and "trade" each other's credits, so that each industry could reach cleanup targets as economically as possible. The regulations were promulgated and ultimately upheld by the U.S. Supreme Court.

No similar market-oriented effort was made in the legislative arena. William Niskanen, a member of the Council of Economic Advisors, suggested amendments to the Clean Air Act, designed to utilize market mechanisms. All were rejected by the Burford EPA. Instead, EPA simply supported a bill that essentially had been drafted by business lobbyists. When that bill was heavily criticized and withdrawn, the EPA lamely announced a series of legislative principles—with no legislative language. Eventually Burford lost the support of the Administration and the business community and was convinced to step aside, leading to the appointment of former administrator William Ruckelshaus in an effort to restore EPA's credibility. Ruckelshaus was followed in turn by Lee M. Thomas, a career bureaucrat.

The policies of the Ruckelshaus and Thomas EPA have not differed markedly from those of the Burford EPA. The difference has been primarily one of style, in that Ruckelshaus and Thomas have been far more open to staff, the environmental community, and business. Both have avoided confrontation. But this has meant there still has been no fundamental reform of EPA's command and control approach to environmental issues.

Conclusion

Despite its revolutionary reputation, the Reagan Administration has failed to promote fundamental change in federal environmental policies. The President did not make the issue a priority, and his appointees most responsible for the environment, James Watt and Anne Gorsuch Burford, lacked the philosophical vision and political adroitness to make such reforms a reality.

The result has been a significant setback to the goals of both environmental protection and free enterprise. How much the opportunity to develop a market-oriented conservation policy, very evident at the beginning of Reagan's first term, has been set back remains to be seen.

The Environment and Economic Progress

John Baden

Americans value their environment. They insist that the ecological integrity of the nation merits serious consideration and that viable ecosystems deserve preservation. But Americans also desire economic progress and are concerned about developing and maintaining a high quality of life.

Unfortunately, economic development is often seen as the enemy of environmental protection. Must the U.S., as some of the more radical environmentalists suggest, take on attributes of Third World economies to preserve the environmental values that Americans cherish? Are relative poverty and diminished productivity requisite to ecological integrity? Despite the obvious damages resulting from development under traditional environmental management, the answer to both questions is, certainly not.

Major reform of environmental policies undoubtedly is in order. If reform takes a rational approach to the issue, it must look to the free market and not to government to improve resource conservation. For despite all their emotional and political power and the quasi-religious image they have developed, the environmental activists, by entrusting America's natural patrimony to the state, have allowed these resources to become targets of plunder by powerful interest groups. Examples: two of the crowning achievements of the Progressive Era, the Bureau of Reclamation and the Forest Service. The Bureau of Reclamation was established with two principal goals: to develop water resources in the West, making the "desert bloom," and to promote settlement in relatively inhospitable regions of the nation, such as the central Columbia Basin. The nation's taxpayers financed the construction of hundreds of dams throughout the West. The first few dams the agency built actually may have produced enough benefits to outweigh heavy construction, operating, and environmental costs. Today, practically none of the Bureau of

Reclamation's proposed projects stand up to rigorous cost-benefit analyses. But the agency's bureaucrats and the special interest groups they serve continue to protect their pet programs.

The Garrison Diversion Unit represents just one example of a Bureau of Reclamation boondoggle. The project will require the construction of 3,000 miles of canals and the destruction of tens of thousands of acres of America's best wildlife and waterfowl habitat. The completed project will irrigate a total of six-tenths of one percent of North Dakota's farmland at an estimated cost of \$1.1 billion—an average price tag of no less than \$1.65 million for each farmer receiving irrigation water from Garrison¹—providing the highly optimistic assumption that the project comes in on budget.

The Forest Service, instituted by legislation in 1891 and established in its present form in 1905, was charged with managing the nation's public timberlands to stem what was perceived as the relentless destruction of U.S. forests by the timber industry. Yet today's "scientific managers" in the Forest Service are themselves destroying primal forests in the Rockies and Alaska to serve political special interests and their agency's ends. In the Tongass National Forest in Southeastern Alaska, meanwhile, the Congressional Research Service reports that between 1974 and 1984 the Forest Service income has averaged 16.7 percent of the \$375,162,000 "spent to manage federal timber assets."² Currently, timber that costs the nation \$92 per thousand board feet to manage is being sold for \$2 per thousand board feet. Such deficit timber sales rob the nation's taxpayers and destroy virgin forests that really are not economic to harvest.

Similar subsidized destruction of public timberland is occurring in the Rocky Mountains, where the Forest Service spends hundreds of millions of dollars to build logging roads and then sells the harvested timber at huge financial losses. Much of this land is suitable for wilderness or "back-country" designation, and many wildlife and recreational qualities of the areas are lost when invaded by roads.

As with the Bureau of Reclamation, Forest Service bureaucrats serve the goals of special interest groups—in this case the timber industry—and not those of the public, taxpayers, or conservationists. Indeed, the political calculus is such that destructive "below cost" timber sales continue, while environmentally benign and potentially lucrative oil and gas exploration and development is blocked.

¹Department of the Interior, Internal Office Memorandum, December 1984.

²Robert E. Wolf, "Timber Sales Income and Expenditures, Tongass National Forest, Alaska," Congressional Research Service, Environment and Natural Resources Policy Division, August 1983.

Where the Progressives Went Wrong

The Progressives' faith in scientific managers resulted in a variety of now recognized inefficiencies and environmental costs. And this faith has had another consequence poorly understood. When the Progressives converted natural resource management from private to government control, they dramatically altered what can be called the "calculus of the individual decision maker," thereby introducing a perverse investment strategy into the political system.

That people tend to give primary consideration to their own well-being is an acknowledged truism. So when government bureaucrats are faced with decisions whose outcome will affect their own welfare, they, as do most people, tend to act in a manner favorable to their own interests. The Progressives assumed, however, that scientific managers would act solely on the basis of some higher set of values. It has not worked out that way.

Mismanagement is not caused by bad or incompetent people filling posts. Thus it will not be solved by finding "better" people. Rather, it stems from a faulty system, which creates incentives leading inevitably toward perverse resource management. Bureaucrats are motivated by "political profit" rather than by economic profit; their salaries are fixed and only indirectly dependent upon the success of their programs. They therefore spend much of their time in wealth-transfer activities, rather than productive, wealth-creating activities. As a result, human energy is wasted, natural resources become bureaucratic bargaining chips rather than sources of public or private capital, and the public interest is not properly served. This is why agencies such as the Forest Service and the Bureau of Land Management are in trouble. After nearly a hundred years of experience, however, the failures of Progressive institutions are becoming increasingly evident to conservationists and fiscal conservatives alike.

The basic environmental institutions need to be reformed, based on the recognition that all individuals, including bureaucrats, make decisions in their own self-interest, contrary to the ideal of the "scientific manager" as an altruistic technician. The desirable course of action for a bureaucrat—the course that will keep him in business—is that which will benefit him and his constituencies the most. Evidence in support of this theory is widespread: below-cost timber sales, unnecessary disastrous dam construction, and subsidized water diversions are all economically inefficient and environmentally costly, but each maintains a particular bureaucracy and its clientele.

But even if public servants truly served the public, without undue self-interest, their assignments as scientific managers under Progressive principles would still be impossible to achieve for two reasons. First, it would

have to be assumed that public servants can somehow divine the “public interest.” That this cannot be done is now widely recognized. Indeed, Stanford University scholar Kenneth Arrow received a Nobel Prize in economics by demonstrating this even in the case of a very small public. Yet scientific managers are required by law to base their performances and their missions on the flawed assumption that they can determine public preferences.

The second reason that scientific managers face an impossible assignment is that they must somehow aggregate and coordinate empirical knowledge that is held by a large number of individuals scattered throughout society. Even with today’s most powerful computers, it is impossible to centralize and process efficiently the massive volume of information held by millions of people.

The New Resource Economics

Americans have lived with the Progressive experiment for a century. The resulting bureaucratic abuses of the nation’s natural resources indicate that institutional reform is long overdue. Such reform is possible if based on the New Resource Economics (NRE), popularly known as “Free Market Environmentalism.” This approach would foster conservation, maintain ecological integrity, and preserve liberty.

NRE economists have diverged from the traditional regulatory model for the environment by weighing the comparative roles of information and incentives in both private and public institutions. While perfectly competitive markets represent a theoretical model that does not exist in the real world, perfectly intentioned government officials, too, are imaginary, for the reasons discussed earlier.

Thus, NRE economists address the same problems identified by the Progressives, but they focus on the real world policy alternatives, comparing market failure with government failure, instead of with some unrealistic ideal represented by a law or bureaucracy. What makes the NRE approach especially useful, then, is that it applies to the issue of environmental protection both the analytic leverage of Public Choice literature on the negative incentives prevalent in public institutions and the neoclassical and Austrian understanding of the positive role played by information and incentives in a free market.

The NRE rests on the fundamental principle that market prices convey highly distilled information and strong incentives to act upon that information efficiently and responsibly. When market prices are distorted

by government actions such as below-cost timber sales or by failures to enforce property rights in the case of pollution, information is lost, and inefficient decisions are to be expected.

In the market system, a change in the price of a resource immediately sends a signal to both producers and consumers of the resource. A price increase means that the resource has become more scarce; it provides incentives to conserve the resource and to search for substitutes. Prices enable individuals to reduce the amount of information they need to make decisions, while encouraging them to care about the preferences of others. The key point is that market prices economize on information while government planning maximizes the information required. This is why the U.S. Forest Service's five-year plans resemble those of the USSR.

Thus, in the public sector, bureaucratic resource managers usually lack the information contained in prices. Public resources are rarely priced at their true market value. They are apt to be undervalued, as in the case of timber, or overvalued, as with wilderness land that lies above rich oil, gas, or mineral deposits. Since public resources are not traded on the market, their value at best can only be estimated. This necessarily leads to inefficient resource management.

This inefficiency can be reduced, say the NRE economists, through privatization of public resources. When resources are privately held and thus potentially transferable to different uses, resource owners are accountable for their management decisions. If they make a poor decision, they forgo potential benefits. This is what motivates owners to use their resources in a manner that maximizes their value. By contrast, government resource managers have little to gain or lose personally because of their decisions. If a bureaucrat makes a bad decision, he rarely suffers negative consequences. Thus private management provides strong incentives to use resources wisely, incentives that are simply nonexistent under public control.

The comprehensive application of NRE principles would lead to the privatization of all land, streams, and wildlife. Private owners are often far more likely to preserve these resources' amenity values and balance their competing uses in accord with true values than are public officials. Where individual ownership is not possible—of air and water, for instance—protecting such common resources is not so simple. Though market forces will operate more efficiently than bureaucratic mandates to the extent to which they can be applied, the impracticality of private ownership means private management is not always the solution. For this reason, “the NRE identifies a legitimate role for government. . . . Property rights and contracts *must* be defined and enforced, there *are* public goods

to be provided, and there *are* common pool resources to be managed where entrepreneurs have not yet discovered a way for private provision and management.”³

Government must participate in the definition and enforcement of private property rights. But its role should not be “top down” command and control regulation. Instead it should be limited to the mediation of disputes, and there should be active government management of resources only when the private sector is faced with high transaction costs, imperfect information, and unavoidable externalities. The government also should provide and protect pure public goods and such “fugitive” resources as migratory wildlife.

Where resource management responsibilities continue to be held by government, reforms must be introduced to foster accountability. As NRE theorists point out, government mismanagement of public goods, common pool, and fugitive resources has led to the decrease of genetic diversity, overexploitation of such common pool resources as salmon, oil pools, and groundwater, and overharvesting of migratory wildlife.⁴ Without fundamental institutional changes, this sort of potentially irreparable damage will continue, leaving the resources essentially unprotected in either the private marketplace or the public policy arena.

The Tragedy of the Treasury Commons

Firing bureaucrats who make bad or irresponsible decisions would improve public resource management vastly. But focusing on the bureaucrats clouds the issue. Since public officials with even the purest intentions cannot be expected to produce results that harm their professional well-being,⁵ when government involvement is genuinely necessary, the only solution is to change the rules of the bureaucratic game. This can be done by manipulating costs and rewards to reduce the curious asymmetry

³Randy Simmons and John Baden, “The Theory of NRE,” *Journal of Contemporary Studies*, Vol. 3, No. 2, 1984, pp. 48-49.

⁴See for example, John Baden and Richard L. Stroup, eds., *Bureaucracy vs. Environment* (Ann Arbor: University of Michigan Press, 1981); Richard L. Stroup and John Baden, *Natural Resources* (Cambridge, Massachusetts: Ballinger Publishing Company, 1983); and Terry L. Anderson, *Water Crisis: Ending the Policy Drought* (Washington, D.C.: The Cato Institute, 1983).

⁵Requesting individuals to so behave violates the cardinal rule of public policy: “Never ask a person to act against his own self-interest.” See Garrett Hardin, *The Limits of Altruism* (Bloomington: Indiana University Press, 1977), p. 27.

between the bureaucracy's designed purpose and the actual policy outcomes.

As Garrett Hardin stated in his classic article, "The Tragedy of the Commons,"⁶ common pool resources, such as fish in the sea or a herd of buffalo, are not owned individually. As a result, demands on such resources can be expected to exceed the resources' capacity to meet them. Individuals receive all the benefits from portions of the commons that they capture, while the costs of individual actions are dispersed over the entire community. Therefore, individuals attempt to capture increased benefits from the commons since costs are borne by society as a whole, not by the individuals themselves. Hardin concludes that, when all users pursue their own interests in a commons, the outcome is a tragedy for the productivity of the commons and, hence, for society in general.

In effect, the federal Treasury is a common pool resource, where bureaucrats and their clientele, including Interior Department employees and environmentalists, compete to capture the Treasury's resources for personal benefit. In this case, the community of users is the so-called iron triangle of bureaucrats, special interests, and elected officials.

Since agency budgets are determined by Congress, the "owner" of the Treasury, superficially it would appear that no department or bureau has a guaranteed right of access to the Treasury commons. But an agency's power to ensure its means of existence from Congress, especially when its clientele is politically influential, is considerable. The Treasury is fair game to all—the essential ingredient of a common pool situation.⁷

A second characteristic of the Treasury that makes it a commons is that demands on the resource exceed the supply. The capacity of the IRS to generate funds for the Treasury is finite, while demands are nearly infinite. Thus, agencies compete for funds, and these funds are, in a relative sense, scarce.

The problem of the Treasury common pool affects more than the environmental agencies, of course, but it has proved to be extremely harmful to conservationist goals. Increased funding of the Bureau of Land Management, the Army Corps of Engineers, and the Forest Service, for instance, has exposed ever more natural resources to government abuse. Thus, understanding the phenomenon of the Treasury as commons—and developing effective countermeasures—would better protect America's environmental heritage.

⁶Garrett Hardin, "The Tragedy of the Commons," *Science*, 162, 1968, pp. 1243-1248.

⁷For a general discussion of this issue, see William Niskanen, *Bureaucracy and Representative Government* (Chicago: Aldine Press, 1971).

Do bureaucrats behave as Hardin's model predicts when faced with the Treasury commons? In the case of the career bureaucrat, the maximization of personal welfare becomes inextricable from the maximization of his agency's welfare, particularly its budget. An important measure of the bureaucrat's personal and professional well-being is his discretion over the allocation of agency resources; measures of agency well-being include expansion of its employment capacity and of its scope of activities, both of which entail increased funding.

Moreover, institutional survival usually becomes the paramount goal of federal agencies, often taking precedence over their intended function. This emphasis is the result of institutionalized incentives, not of some inherent malevolence found in public servants.

In fact, because of their risk aversion and long-run approach, bureaucrats could be categorized as "satisfiers."⁸ Public officials, in other words, aim at a "satisfactory" rate of budget and personnel increases by strategic lobbying for funds from Congress and the Treasury, subject to the constraints imposed by the incentive structure in which they operate. While this is not necessarily the same as maximizing profits,⁹ it is the bureaucratic equivalent of private self-interest maximization.

The Treasury as a common pool leads to the same adverse consequences as Hardin's model. Gains from capturing another increment of the Treasury finance the activities of the bureaucrat's agency, while the costs of his capture are spread among the entire community of political claimants and taxpayers. All bureaucrats face the same incentives, and as a result, the rational act is to attempt to capture additional increments of the Treasury in the form of increased appropriations.

An important consequence of the Treasury as commons is to render ineffective such market signals as prices and consumers' preferences. As a result, bureaucratic leaders are able to magnify their individual impact in tapping the Treasury through mutually beneficial arrangements. Although community restraint by means of "mutual coercion mutually agreed upon" can avert the tragedy of the natural resource commons,¹⁰ political logrolling and bureaucratic collusion intensify demands on the Treasury commons.

⁸Herbert Simon, "Theories of Decision-Making in Economics and Behavioral Science," *American Economic Review*, June 1959. Reprinted in E. Mansfield, ed., *Microeconomics: Selected Readings*, 2nd Edition (New York: W. W. Norton, 1975).

⁹George W. Ladd, "Utility Maximization Sufficient for Long-Run Survival," *Journal of Political Economy*, July-August 1968, pp. 478-483.

¹⁰Hardin, *op. cit.*

Finally, the bureaucratic community has been able steadily to increase the absolute size of the commons rather than utilize it in a cost-efficient manner. In particular, the costs of providing concentrated benefits for special interest groups can be dispersed and hidden through the development of “off-budget” items, use of regulations instead of expenditures, and inflation.¹¹

Losses inherent to the tragedy of the Treasury commons are borne by all society members in the form of loss of control over productive resources and of relaxation of the rule of willing consent—inefficiencies compounded by loss of freedom. As Hardin so aptly states, “Freedom in the commons brings ruin to all.” Pursuit of bureaucratic self-interest in the Treasury commons similarly is bringing ruin to the environment and society at large.

Development of a Predatory Bureaucracy

Despite the strong propensity toward growth of government budgets and despite the flawed institutional structures established by Progressive reformers, there are grounds for cautious optimism. It may be possible to create new institutions to ameliorate the problem of growth in the governmental sector, including those agencies doing the most damage to the environment. A “predatory bureaucracy” represents one means to achieve this end.

A predator is an animal (occasionally a plant) that captures and eats other animals. If a similar function could be instituted in a bureaucratic environment, there would be a counterweight to the traditional iron triangle. For example, assume that a Bureau of Budgetary Control (BBC) were established to pursue only one fundamental goal: budgetary reductions. The BBC would be constrained by a one-time appropriation to carry it for two years only, which would help harness its fundamental pathology toward bureaucratic growth. When the BBC succeeded in killing an agency’s project, Congress would award one percent of the cost of the program to the BBC, and the agency that had proposed the project would suffer a budget cut of a like amount. (These figures are strictly arbitrary and could be adjusted as experience dictated.) Thus, continued funding of the BBC, and hence its survival and growth, would depend on its success in blocking other agencies’ budgetary requests.

Such a process might be particularly effective in countering the inef-

¹¹Gardiner Ackley, “The Costs of Inflation,” *American Economic Review*, 68, 1978, pp. 149-158.

ficient or damaging decisions of environmental bureaucrats. Consider a Bureau of Reclamation request for \$250 million to build a new dam, primarily for flood control purposes. Say the project had a negative cost-benefit ratio, would destroy environmentally sensitive wetlands, and would primarily benefit a few local farmers who grew federally subsidized grain and sugar beets. The BBC would marshal evidence, cultivate its own special interest groups, such as taxpayers and conservation organizations, to oppose the Bureau of Reclamation and its clientele. If Congress rejected the proposal, the Bureau of Budgetary Control would receive a budgetary bonus for eliminating an economically disastrous water project, and the Bureau of Reclamation would be penalized for proposing the project. Thus, self-interest would motivate bureaucrats in the BBC to advance the public interest. The BBC would be yet another bureaucracy, but in this case, the traditional bureaucratic incentive structure would be harnessed to counter the inherent bureaucratic pathologies to government bureaus.¹²

Conclusion

Partly because of the public's legitimate concern over environmental abuse, the Progressives succeeded in launching a counterrevolution in the area of resource management. They developed, propounded, and proselytized an unattainable ideal of "scientific" management. Their philosophy became a subculture with beliefs, values, and information—much of which was misleading or false. On the basis of this misguided idealism, a group of institutions and agencies developed, matured, and lodged itself in America's political and cultural landscape. The consequences often have been economically and environmentally perverse; as the public begins to confront the predictable consequences of these flawed institutions, the Progressives' philosophical descendants are now on the defensive, trying to preserve the governmental legacy of that era.

It now is clear that the reforms of the Progressive Era yield vastly inferior outcomes to those produced by alternative, market-oriented institutional arrangements. And the results of good intentions gone awry are vast economic inefficiencies, unconscionable ecological atrocities, and substantial inequities.

¹²The idea of developing a predatory bureaucracy is adapted from Rodney D. Fort and John Baden, "The Federal Treasury as a Common Pool Resource and the Development of a Predatory Bureaucracy," in John Baden and Richard L. Stroup, eds., *Bureaucracy vs. Environment*, *op. cit.*

The Founding Fathers were right the first time. By relying on private property rights and the market process, they fostered a century of unparalleled economic growth and prosperity. Admittedly, problems arose when political institutions failed to safeguard resources that people value. But on balance, the Constitution permitted a society of free and responsible individuals to work together for their mutual benefit.

The time has come to launch a “counter-counterrevolution,” based on the principles of the New Resource Economics, including the protection of private property, the enforcement of the rule of willing consent, and the promotion of individual freedom and responsibility. By experimenting with the market process—privatizing land, for example—and creating competitive bureaucratic incentives to slow the growth of government, the U.S. could realize the multiple objectives of enhancing environmental quality, eliminating expensive government programs, reducing the burden of government, and increasing individual liberty.

The Market Alternative for Land and Wildlife

Terry L. Anderson

Many policy makers, and even some economists, argue that land conservation requires government intervention. Says one leading economist, "It is the clear duty of government, which is the trustee of unborn generations as well as for its present citizens, to watch over, and if need be, by legislative enactment, to defend the exhaustible natural resources from rash and reckless exploitation."¹ Yet public bureaucracies do not always preserve the environments they are supposed to protect.

Typical of the wide divergence between the theory and the practice of government land management is the removal of pinyon and juniper trees from federal lands in the Southwest by the Forest Service and Bureau of Land Management (BLM). In a process known as chaining, in which 600 feet of chain is dragged between crawler tractors, the Forest Service and BLM remove pinyon and juniper in an effort to improve forage. Between 1960 and 1972, the BLM chained nearly 300,000 acres in Nevada and Utah, and the Forest Service, more than 80,000 acres. More than 3 million acres, including land in Arizona and New Mexico, have fallen to this destructive and expensive practice.

The Forest Service refers to chaining as a "plant control program" to "rehabilitate" grasslands where woodlands had spread. Certainly there is little question that chaining significantly enhances forage production; estimates range as high as a 600 percent increase. Furthermore, where grass is quickly established, erosion is reduced. And while data on wildlife habitat are not complete, there is no evidence of positive or negative impact on mule deer in the area.

Are the benefits worth the costs? Environmentalists respond with an emphatic no. It is not clear, for example, that the land being "rehabili-

¹A. C. Pigou, quoted in J. W. Milliman, "Can People Be Trusted with Natural Resources?" *Land Economics*, August 1962, p. 199.

tated” had become wooded because of man’s intrusion, since it might not have been grassland before settlement. Indeed, to the extent that early mining operations had deforested the region, the “intrusion” of pinyon and juniper might simply constitute the reestablishment of natural woodlands.

Initial Forest Service estimates calculated a benefit-cost ratio of 1.08:1 for chaining, based on the assumption that erosion and hunting benefits were positive—when in fact they were questionable. Without the latter benefits, the benefit-cost ratio falls to 0.86:1. Official calculations, moreover, presume that the chained area will remain clear for 50 years. Yet no area of chained land has been in existence for more than 20 years, so the assumption is pure speculation. And with a shorter project life, the benefit-cost ratio drops even lower. When Forest Service researchers used an infinite project life and a 7 percent discount rate—optimistic conditions, to say the least—“the more successful conversion projects just about broke even from a benefit-cost standpoint.” This qualified endorsement, combined with the fact that private ranchers chain their land only when subsidized by the government, provides additional evidence that this environmentally damaging practice is also financially wasteful.

Thus, the government, charged with protecting the public’s land holdings, has actually subsidized destruction of its resources. Despite this and many other examples of governmental failure, natural resource economists continue to focus on alleged market failure. Rejecting the market, they support government intervention—taxes, subsidies, and regulations, as well as outright public ownership.

Most of the arguments over market failure center on an alleged divergence between private and social discount rates or costs that makes pervasive government intervention inevitable. E. J. Mishan, for example, concludes that “possibilities of protecting the citizen against such common environmental blights as filth, fume, stench, noise, visual distraction, etc., by a market and property rights are too remote to be taken seriously.”² And Paul Samuelson, in the textbook that dominated college economics courses during the 1960s and 1970s, states that:

Wherever there are externalities, a strong case can be made for supplanting complete individualism by some kind of group action. . . . The reader can think of countless . . . externalities where sound economics would suggest some limitations on individual freedom in the interest of all.³

²E. J. Mishan, “A Reply to Professor Worcester,” *Journal of Economic Literature*, March 1982, p. 62.

³Paul A. Samuelson, *Economics*, 11th edition (New York: McGraw-Hill, 1980), p. 450.

This approach “contains an implicit bias toward ‘intervention solutions’ for externalities [that is, effects on those not involved in a particular transaction] in the form of taxes, subsidies, regulations and prohibitions” because it suggests “that externalities necessitate ‘corrective’ government action.”⁴

A few economists, however, are beginning to challenge the traditional view and to develop a New Resource Economics (NRE) paradigm.⁵ The new approach gives the kind of rigorous, theoretical, and empirical attention to government failure that previously was restricted to market failure. Building on ideas of property rights, Public Choice, and Austrian economics, the new resource economists focus on the information and incentives generated by the political-economic system. They study examples of market success and governmental failure, rather than vice versa. They seek answers to such questions as: What are the costs of forming contracts for marketing environmental quality? Why do public institutions subsidize environmental degradation? What public policies might foster more efficient natural resource markets?

Of particular importance is how contractual arrangements evolve in the market process. As resource and environmental values change, individuals have an incentive to try to capture these values, that is, to try to establish private property rights to natural resources. If such rights are developed, owners will have the incentive to consider alternative uses of the resources. By contrast, if private property rights are not established, the resources will remain in a common pool—in theory owned by everyone but in practice by no one—and be overexploited or allocated through the political process. Thus, without private ownership, different groups fight bitterly for control of natural resources. Neither efficiency nor environmental quality is well served.

In some cases, the lack of private resource contracts may derive from technological constraints on establishing property rights. Example: before the invention of barbed wire, it was difficult for fencing to effectively secure property boundaries. But today, legal institutions often prevent the formation of private property rights, even where innovative market solutions to land and wildlife problems might profitably evolve.

⁴John Burton, “Epilog,” in Steven N. S. Cheung, *The Myth of Social Costs* (London: The Institute of Economic Affairs, 1978), p. 90.

⁵See, e.g., Terry L. Anderson, “The New Resource Economics: Old Ideas and New Applications,” *American Journal of Agricultural Economics*, December 1982, pp. 928-934.

Market Solutions for Land and Wildlife Problems

Research in the New Resource Economics is beginning to uncover substantial evidence that supports greater reliance on the marketplace to promote land and wildlife protection. In particular, private contracts have proved effective because they require mutual consent, thereby harnessing self-interest in a way to promote coordination and cooperation.

Private v. Public Land Conservation

Progressive era criticism of private enterprise in the early 20th century provided momentum for the reservation of millions of acres of land to the federal and state governments. As a result, federal agencies today are responsible for managing more than one-third of the nation's land; ownership by all levels of government approaches 40 percent. The federal government owns 95.3 percent of Alaska and 86.4 percent of Nevada.

The new resource economists question the legitimacy of this public ownership. Empirical studies of land management by the Forest Service, Bureau of Land Management, and other agencies suggest that, as in the case of chaining, neither economic efficiency nor environmental quality have been fostered by government control.

The evidence of inefficient public land management is particularly dramatic for federal timber lands. As shown in Table 1, the Forest Service continually runs at a deficit despite the fact that it controls timber worth billions of dollars. For Alaska, each dollar spent on timber sales returns, on average, only 2 cents in timber receipts.

Even environmental groups are beginning to use figures on below-cost timber sales to expose how bureaucratic management is destroying environmentally sensitive areas. Complains the Wilderness Society, "While the federal government has placed emphasis on the role of the national forests in supplying wood products, it has disregarded basic economic principles that should figure prominently in timber production."⁶ In fact, without federal subsidies for road construction, many areas would not be "economical" for timber production and therefore would be managed as wilderness lands.

⁶Peter Emerson, Anthony T. Scott, and Deanne Kloepfer, "Wasting the National Forests: Selling Federal Timber Below Cost" (Washington, D.C.: The Wilderness Society, 1984), p. 16.

Forest Service Deficits, 1970-1980
(millions of dollars)

<i>Fiscal</i> <i>Year</i>	<i>Receipts</i>	<i>Expenditures</i>	<i>Deficit</i>
1970	431.1	627.2	196.1
1971	370.1	719.0	348.9
1972	503.5	780.9	277.4
1973	656.3	806.8	150.5
1974	706.9	896.4	189.5
1975	628.1	1,071.5	443.4
1976	1,053.1	1,557.1	504.0
1977	1,061.7	1,613.1	551.4
1978	1,116.0	1,635.6	519.6
1979	1,401.2	1,934.2	533.0
1980	1,287.8	2,071.5	783.7

Since the 1960s, Congress passed acts such as the Classification and Multiple Use Act (1964), the Public Land Law Review Commission Act (1964), the National Environmental Policy Act (1969), and the Federal Land Policy and Management Act (1976) designed to improve bureaucratic management by making the government give closer attention to economic efficiency, environmental quality, and public demands. But the fundamental problems of public ownership remain. Indeed, with a growing number of economists and even environmentalists producing studies critical of public land ownership and management, private alternatives increasingly are being considered.

Notes Barbara Rusmore of the Montana Land Reliance:

The economics of land conservation are currently undergoing some changes. In the past, much of the activity in land conservation centered on moving land from the private sector into governmental ownership and on classifying lands into protected status (national parks, wilderness, and primitive areas, monuments, etc.). In the present state of tightening public budgets, money for land acquisition is rapidly drying up and resource development of public lands is receiving federal encouragement. Leaving the issue of struggle over public land management aside, the strategies of the land conservation movement are adapting accordingly as they look increasingly to the private sector for support and action.⁷

⁷Barbara Rusmore, "Economic Perspectives on Land Conservation," in Barbara Rusmore, Alexandra Swaney, and Allan D. Spader, eds., *Private Options: Tools and Concepts for Land Conservation* (Covello, California: Island Press, 1982), p. 187.

Leading this search for private solutions has been The Nature Conservancy, an organization that, since 1950, has been involved in the preservation of nearly 2 million acres in 50 states, the Virgin Islands, Canada, and the Caribbean.⁸ In 1984, the Conservancy held more than \$394 million in assets, nearly \$211 million of which included natural land areas. The Conservancy's portfolio included nearly 800 preserves, a permanent capital fund of over \$70 million, and 3,706 land conservation projects encompassing 2.4 million acres.

At the local level, land conservation organizations, using primarily volunteer initiative and private funds, have grown rapidly during the past three decades. In 1950, only 36 conservation organizations existed in the U.S. In 1975 there were 173 and by 1982 there were 404 groups, representing more than 250,000 members and controlling over 675,000 acres of valuable resource lands. More than 60 percent of this land is in the New England and Middle Atlantic states, where private ownership predominates.

Land conservation trusts are generally established with tax-exempt status to preserve land for its amenity values and to keep land in agricultural uses. Funds are raised by soliciting members, levying a small membership fee per year, and by collecting grants from foundations and corporations, sometimes amounting to hundreds of thousands of dollars. With these funds, the land trusts purchase fee simple title to land or conservation easements. In addition, trusts find that "given the moral inclination and encouraged by tax incentives, some . . . [private] owners are committing their properties to conservation purposes."⁹

Tax incentives are important to the land conservation organizations. Individual contributions are treated as charitable donations. Donors of conservation easements can also deduct the difference between the value of the land without the easement (the development value) and the value with the easement (the conservation value). These incentives "are one of the most effective levers the [Nature] Conservancy has to pry loose land it wants," says Peter Wood.¹⁰

Conservation organizations tend to manage lands differently from public bureaucrats. Such groups, for instance, are willing to swap property, if doing so will advance their environmental goals. When The Nature Conservancy decided that land it had been given in the Virgin Islands was not

⁸The Nature Conservancy, "Annual Report, 1984," *The Nature Conservancy News* 35, March/April 1985.

⁹Rusmore, *op. cit.*, p. 187.

¹⁰Peter Wood, "Business-Suited Saviors of Nation's Vanishing Wilds," *Smithsonian*, December 1978, p. 79.

of prime environmental importance, it exchanged it for land in Wisconsin that could be managed as an integrated watershed for amenity purposes. While land conservation organizations undoubtedly suffer from some of the limitations faced by all nonprofit organizations, they do have an incentive to make efficient trades because they pay the price—the so-called opportunity cost—of mismanaging their lands.

Land trusts also are willing to charge user fees to people who benefit from the land. Since these organizations cannot readily tap public funds, they are continually looking for innovative ways to finance projects. Speaking for the Trustees of Reservations in Massachusetts, Gordon Abbott, Jr., says:

We're also fortunate that user demand enables us to raise 35 percent of our operating income from admission fees and that these can be adjusted within reason to catch up with inflation. We're great believers in the fairness of users paying their way.¹¹

Groups are charging for everything from parking to concessions to entrance, demonstrating that it is possible to exclude nonpayers from consuming amenity values. And as these values rise, organizations are finding it worthwhile to control access in an effort to raise funds, which can be used for operating expenses or reinvested. In contrast, the National Park Service has kept the actual cost of entrance fees below pre-1920 levels.

As the federal government cuts back on its land acquisition programs, it is hardly surprising that private groups are becoming more active in protecting environmental amenities. These organizations have raised significant amounts of money and prospered despite problems associated with “free-riders” (users of a facility who escape paying for it).

Thus, it is possible to protect the environment while allowing the private sector to use it. As a leader from the New Jersey Conservation Foundation puts it, “we have entered an era when we now acknowledge that government cannot best solve all our problems and that solutions that draw on the private sector will offer greater economic efficiencies and flexibility.”¹²

Private Wildlife Preserves

The contrast between public and private preservation of land and

¹¹Gordon Abbott, Jr., “Long-Term Management: Problems and Opportunities,” in Rusmore, Swaney, and Spader, *op. cit.*, p. 207.

¹²David Moore, “Adapting the British Countryside Commission Idea,” in Rusmore, Swaney, and Spader, *op. cit.*, p. 213.

wildlife is demonstrated on preserves owned by the National Audubon Society. The Society's Rainey Wildlife Sanctuary in Louisiana is home to deer, armadillo, muskrat, otter, mink, geese, and many other birds. This makes it an unlikely site for natural gas production. Since the 1960s, however, gas has been produced there—and under Audubon auspices. A Society pamphlet reports that “there are oil wells in Rainey which are a potential source of pollution, yet Audubon experience in the past few decades indicates that oil can be extracted without measurable damage to the marsh. Extra precautions to prevent pollution have proven effective.”¹³ In return for allowing Consolidated Oil and Gas, Inc., access to the sanctuary, the Society receives royalties. The stricter contractual restrictions on gas extraction imposed by the Society of course raise the company's production costs. In turn, Audubon's royalties are lower. This is the price the Society willingly pays for protecting the environment.

The relationship between the National Audubon Society and Consolidated Oil and Gas is remarkably cooperative. Lonnie Lege, manager of the sanctuary, is enthusiastic about the program. As an environmentalist, he emphasizes that “you better believe the oil companies behave themselves in Rainey.” At the same time, he proudly points to levees built by the oil companies and says “they were real cooperative.”¹⁴ Says John Anderson, the director of Audubon's sanctuaries department:

The relationships we have had with oil companies over the years have been very satisfactory. As long as we know what precaution we want them to take, we have no trouble in getting them to comply. We probably require them to take extra precautions simply because it is wildlife sanctuary and we have a membership of over 400,000 who would be very irate if we polluted our own environment, our own land, our own sanctuary. The companies have leaned over backwards.”¹⁵

In fact, the Audubon Society does not even have to detail the precautions that must be taken. The Society supervises dredging and pumping, but the oil companies recognize that it is in their interest to be sensitive in dealing with the environment. The Rainey Wildlife Sanctuary demonstrates how cooperation and coordination can be enhanced through private land ownership.

The Rainey Sanctuary is not the only example in the Audubon system. Discovery of oil in Michigan brought the Bernard W. Baker Sanctuary, owned by the Michigan Audubon Society, to the attention of the Mobil

¹³In John Baden and Richard Stroup, “Saving the Wilderness,” *Reason*, July 1981, p. 34.

¹⁴*Ibid.*

¹⁵*Ibid.*

Oil Corporation. In 1975, Mobil approached the Michigan Society and proposed to explore and drill for oil in the Big Marsh; the company offered a potential annual income of up to \$100,000 per well, with the possibility of four or five wells. Although a majority of the Society's members voted in 1976 to support mineral extraction, the tally was short of the two-thirds necessary for acceptance. Mobil withdrew its offer to lease the land.

Five years later the situation had changed. The Society was facing a \$14,000 deficit. It thus accepted Michigan Petroleum Exploration's offer contingent on the firm's using new technology known as "no-trespass directional drilling." One report describes the results:

They had just broken ground for the drilling pad, last time I went out to Big Marsh Lake. . . . Three or four weeks probably, and a sky full of sandhill cranes would be splashing down out there in the marsh. That's why the hardhats were in a hurry. They had to get the pad in, and find what they were looking for beneath the marsh, and get it out or get out themselves for a while, before the cranes returned. That's the way it was written in the contract. There was this timeclock, and when the cranes punched in, the hardhats would have to punch out.¹⁶

The Society estimates that its five-year income from the contract ultimately could amount to \$1,500,000. Under the Society's strict environmental rules, Michigan Petroleum can drill only from its pad, a half mile from the marsh. It must use high efficiency mufflers to minimize noise, contain drilling fluids, and finance studies of possible environmental programs. In reporting a conversation with Audubon's David Reed, manager of the refuge, John Mitchell captures the changes in environmentalist thinking:

We talked into the evening, Reed and I. He said he had come a far piece from Earth Day. I said, so had I. Once in an unguarded moment, he allowed as how he liked the idea of cooperating with industry in a situation where it was likely there would be no adverse impact on the biotic community. And I said that maybe if that kind of situation wasn't on the scarcer side of rare—well, then probably we would find more preservationists behaving like pragmatists. Or at least beginning to think that way.¹⁷

Protection of Wildlife

There is perhaps no better and more current example of the evolution of conservation practices and private markets than wildlife. In the U.S.

¹⁶John G. Mitchell, "The Oil Below," *Audubon*, May 1981, p. 16.

¹⁷*Ibid.*, pp. 16-17.

wildlife has been treated mostly as a “common pool” resource where capture determines ownership. As a result, some species, such as buffalo, sea turtles, grizzly bears, and passenger pigeons, have been driven near or to extinction—providing ample ammunition for environmentalists seeking government control of wildlife.

But these are not examples of unavoidable market failure. Establishing property rights to wildlife is difficult, of course, because game migration crosses boundaries and ignores fences. At the same time, easy access for hunters and fishermen to abundant, “free” public lands and wildlife in the American West traditionally has made it uneconomical for private entrepreneurs, who must cover their costs, to market wildlife to the public. But these conditions are changing.

Population and income growth have increased the demand for recreation in general and wildlife in particular. As public wildlife resources have been overused, their recreational value to each visitor has declined, causing some entrepreneurs to seek private means to meet the demand for wildlife.

Timber companies in the South, for example, have begun to explore the profit potential in resource management that enhances wildlife. In the past, private Southern forests have been managed primarily for pulp wood, since marketing the wildlife habitat was not worth the costs of doing so. As amenity values have risen, however, firms such as the International Paper Company have adopted new management techniques that enhance the populations of white-tailed deer, turkeys, rabbits, bobwhite quail, mourning doves, and other species.

Since such steps are costly, why do companies bother? Part of the reason, of course, is to improve their public image. And the firms also earn as much as \$10 per acre in hunting licenses. International Paper’s 3,500-acre Cherokee Game Management Area in east Texas earns \$6 per acre annually. In other states, leases average from 50 cents to \$1 per acre, depending on the quality of the site. *Outdoor Life* editor Richard Starnes concludes that “In the future, timber companies will get involved with leasing lands to hunting clubs, which will then provide timber management of their own. This will give wildlife hunters an investment in helping companies manage their lands.”¹⁸

The number of clubs that provide private opportunities to hunt is growing. Reports *Fishing and Hunting News*: “Today, as the ranks of hunters grow and the available public lands shrink, more and more savvy

¹⁸Richard Starnes, “International Paper Has a Grand Plan,” *Outdoor Life* January 1982, p. 11.

sportsmen are turning their attention to the hunting club. What's more, folks have discovered that these preserves are an affordable option to hanging up the gun at the end of the general season."¹⁹

Clubs that support different bird species can be found from coast to coast. The contracts governing the use of private reserves vary, with fees charged based on the number of birds bagged, the number of birds released in the fields, guide services, and annual membership fees. The clubs are expanding because:

In these days of posted farmland, shrinking public access, and growing hordes of hunters, a hunting preserve membership is an absolute guarantee that you will have a place to hunt and a place to take junior, and you won't have to spend half of the day looking for a landowner whose permission to hunt may not come readily. . . . The bottom line is better hunting, more shooting, and a happier end to each excursion. What more can the outdoor sportsman ask for?²⁰

Clearly, some sportsmen are beginning to recognize that private contractual arrangements offer a very attractive alternative to the public provision of wildlife. This alternative is especially evident in Texas, where more than 85 percent of the land is privately owned. Deer hunters purchase leases to hunt on private land at fees that range from \$100 to \$2,000 per gun, depending on the quality of the hunting site, the quality and quantity of game, and the facilities and services provided by the landowner. On a per acre basis, lease rates run from 25 cents to \$10 annually; and "the net returns from deer leases equal or exceed the annual net returns from livestock operations in many areas of the state."²¹

In Montana, meanwhile, ranchers in the eastern portion of the state, where deer populations are high, are charging hunters an access fee. The system works because "the rancher-landowner is responsible for the wildlife on his place. . . . [T]he cowman participates because he makes money. By the same token, if that cowman posts his land "no hunting," it costs him money. You do not see that many acres posted "no hunting."²²

¹⁹"Private Clubs Provide Choice Shooting," *Fishing and Hunting News*, April 1982, p. 8.

²⁰*Ibid.*

²¹C. Robert Taylor, Bruce Beattie, and Kerry R. Livengood, "Public vs. Private Systems for Big Game Hunting," paper presented at a conference on Property Rights and Natural Resources: A New Paradigm for the Environmental Movement, Center for Political Economy and Natural Resources, Bozeman, Montana, December 1980, p. 2.

²²Gale Chambers, "Cattle and Wildlife—Managing for Both," *Montana Farmer-Stockmen*, January 7, 1982, p. 48.

Because they bear the cost of wasting an otherwise valuable resource, ranchers are changing their view of wildlife and hunters and adjusting their ranching techniques to enhance wildlife habitat. Contractual arrangements are substituting cooperation for conflicts between landowner and sportsmen.

Threatening the future of wildlife markets is proposed state legislation that would void private contracts. Montana law, for example, states that wildlife is the property of the state and therefore cannot be sold. So far, individuals have circumvented this by charging trespass or access fees, but some hunters are pressing the state to mandate open access across private lands to public lands, and even to public resources including water, fish, and wildlife. Such legislation would prevent market allocation of wildlife resources.

Protecting Streams and Fish

Another example of a resource that has increased in value is water left within the confines of a stream's banks, the so-called instream flow.²³ When water rights were first created in the American West, there was little consideration of who had the right to instream flows. But industrialization, rising incomes, and more leisure time have led to an increased demand for such instream uses as waste disposal, recreation, and unmolested scenery.

As instream uses began to compete directly with those uses where water is diverted (i.e., taken out of the stream), judicial and administrative agencies have attempted to adjust the institutional structure to account for the new values. The rationale for government intervention is that these uses are a public good—that is, it is difficult, if not impossible, to exclude nonpaying users—and additional units of the good can be provided at zero extra cost. In addition, some analysts argue that instream amenities can have value simply because they exist. A New Yorker, for instance, may derive satisfaction merely from knowing that there is a free-flowing stream in Montana, even if he has no intention of ever seeing it.

Does this justify government allocation of water, or could the marketplace resolve the conflicts between uses? According to one writer, “existing inefficiencies in water allocation result from deficiencies in the private right system rather than alleged market failures. The existing water laws seriously limit private acquisition of instream flow rights, so we cannot be

²³Terry L. Anderson, *Water Crisis: Ending the Policy Drought* (Baltimore, Maryland: The Johns Hopkins University Press, 1983).

sure from experience that the initial public-good assumption is accurate.”²⁴

In many Western states, the institutional structure precludes the private ownership of instream flows. The concept of “beneficial use”—initially developed for agricultural, mining, and domestic uses—often does not include instream flows, for instance. In the early mining camps, beneficial use was determined by a user willingly diverting the water; over time water rights have been increasingly determined by judicial and administrative agencies, which have ruled that reserving instream flows for amenity purposes does not constitute a beneficial use.

Requiring the diversion of water to establish beneficial use has produced perverse results. For example, when the Colorado legislature authorized the Colorado River Conservation District to reserve water for instream purposes in any natural stream large enough to support a fish population, the Colorado Supreme Court ruled that there was “no support in the law of that state for the proposition that a minimum flow of water may be ‘appropriated’ in a natural stream for piscatorial purposes without diversion of any portion of the water ‘appropriated’ from the natural course of the stream.”²⁵ As long as the maintenance of instream flows does not constitute a beneficial use of water, private appropriators cannot define and enforce their rights to the flows, and a market cannot develop. This is a case of governmental, not market, failure.

Also hindering the market allocation of water is the general practice by the states of forcing rights holders to forfeit their rights if the water is not used. That is, if the water is left in a stream to provide a nice view or a fish habitat, the law treats it, and the right to it, as abandoned. The rationale for this doctrine is that speculation in water has caused valuable resources to remain idle and unproductive, inhibiting economic growth. Since water held for speculative purposes cannot be distinguished from water held for instream uses, the latter fell under the law of abandonment. Thus, the law stifles the establishment of instream water rights and discourages what might become highly valued uses. Removing the beneficial use restrictions and the law of abandonment would eliminate an institutional barrier

²⁴James Huffman, “Instream Water Use: Public and Private Alternatives,” in Terry L. Anderson, ed., *Water Rights: Scarce Resource Allocation, Bureaucracy and the Environment* (Cambridge, Massachusetts: Ballinger Publishing Company and Pacific Institute for Public Policy Research, 1983).

²⁵*Colorado River Water Conservation District v. Rocky Mountain Power Company*, 158 Col. 331, 406 P. 2d 798 (1965).

to the establishment of instream flow rights and the private production of amenity values.

If such legal obstacles to the establishment of instream rights were removed, evidence suggests that private contractual arrangements for instream uses would develop. On small Western streams, for example, where some of the legal restrictions on water uses do not apply, private owners are providing fishing access. In the Yellowstone River Valley south of Livingston, Montana, several spring creeks begin and end on private property and are wholly appropriated by the landowners. Since access to the streams can be monitored inexpensively, landowners collect a fee from fishermen. Owners have an incentive to develop spawning beds, prevent siltation, and keep cattle away from streams to protect the bank vegetation and cover. Owners also limit the number of fishermen per day so that the value of the recreational experience is not diminished.

Fishing rights in England and Scotland have long been well established and instream users encouraged. The tradition of trout fishing in Great Britain has led some owners to maintain their fisheries even though they have not marketed the fishing rights. As the value of fishing rights has increased with the demand, however, "there are few landowners . . . who can afford to ignore the commercial aspect of the sporting rights which they own."²⁶ It has become worthwhile for them to incur the costs of specifying and enforcing contractual arrangements for fishing. As a result, many private, voluntary associations have been formed to purchase rights to instream flows and to charge fees for fishing. "In the 1960s and 1970s, smaller, privately managed fisheries that offered exclusivity in exchange for higher rod fees began to break out like an aquatic rash around [England]. Now every city and major town . . . has first-rate trout fishing within easy reach and at an affordable price."²⁷

In Scotland:

Virtually every inch of every major river and most minor ones is privately owned or leased, and while trespassing isn't quite as serious a crime as first-degree murder or high treason, it isn't taken lightly. . . . Many of the stretches, which may be 100 yards of one bank of a river or several miles of both banks, are reserved years in advance, with a long waiting list.²⁸

The British system illustrates how the United States might restructure

²⁶Douglas Southerland, *The Landowner* (London: Anthony Bond, 1968), p. 110.

²⁷Brian Clarke, "The Nymph in Still Water," in J. M. Migel and L. M. Wright, eds., *The Masters of Nymph* (New York: Nick Lyons Books, 1979), p. 219.

²⁸Ed Zern, "By Yon Bonny Bank," *Field and Stream*, 1981, p. 120.

its institutional arrangements to encourage the private preservation of instream flows. If privately owned, instream flow rights possess a value that cannot be ignored. For, notes author Douglas Southerland, there is no doubt:

... that sporting rights are a desirable amenity ... but it must be remembered that without careful preservation much of the amenity would not exist. The good-natured farmer who allows anyone to shoot over his land, and does nothing to preserve his stock, will soon find out there is little left to shoot. ... [I]f he invests in improving his sporting amenities, he is surely entitled to make what profit he can from his enterprise. That this should result in the rationing of the commodity by prices is no more deplorable than the fact that Dover sole costs more than herring.²⁹

Even pollution could be reduced if individuals were allowed to own water within the confines of a stream's banks. Under such conditions, legal rules would evolve to make firms liable for contaminating rivers. Owners of instream fishing rights, for example, could bring suit against an upstream polluter whose effluent adversely affected their fishing resource. In England, the Angler's Cooperative Association (ACA) has assumed the job of monitoring pollution. "It has investigated nearly 700 pollution cases since it started and very rarely does it fail to get abatement or damages, as the case requires. The anglers have behind them a single fact. Every fishery in Britain, except those in public reservoirs, belongs to some private owner."³⁰

These efforts have even preserved trout fishing on the Derwent River, which flows through the industrial city of Derby. The ACA prevented the city from dumping sewage into the river and got an injunction against British Electric to stop it from running warm water directly into the river. "ACA also deals with ... mud running into a stream from a new road grade, or a ditch. ... This is actually a good example of a common form of pollution which we [in North America] accept but which is quite unnecessary and not hard to avoid."³¹

Unfortunately, state laws in the U.S. often prohibit the ownership of water for instream uses, thereby inhibiting market solutions to instream use conflicts. States should remove restrictions on ownership of instream flows and owner-controlled access. The private British water institutions,

²⁹Southerland, *op. cit.*, pp. 113-114.

³⁰J. H. Dales, *Pollution, Property and Prices* (Toronto: University of Toronto Press, 1968), p. 68.

³¹*Ibid.*, p. 69.

which promote high quality fishing and give owners an incentive to guard against stream pollution, demonstrate the important role that private, contractual arrangements can play in promoting environmental amenities and protection.

Conclusion

Early in the 20th century, conservationists turned to the government as an ally. Yet ever since, evidence has been accumulating that public bureaucracies can destroy the environment as readily as protect it. At the same time, it has become increasingly clear that the marketplace creates incentives for property owners to enhance, not waste, the value of their resources. Today wildlands and green belts are being preserved by private organizations around the country. Fish and wildlife habitats are being improved by landowners who have a market incentive to preserve their assets.

The continued evolution of free market environmentalism, however, will require additional changes in attitudes about markets. Some people still think that public land ownership provides a free environmental lunch. But wildlands and wildlife habitats have a cost; as long as they are zero priced and scarce, they will be overused and their quality will diminish. In the marketplace, by contrast, people pay the real cost of the resources they use, which is why recreationists so often resist market solutions.

Most important, government policy must allow the development of private property rights for land, wildlife, and water resources. Environmentalists are beginning to recognize that environmental protection can be enhanced by capitalizing on the power of free markets. As they begin to build coalitions with fiscal conservatives and others, private protection of the environment will become increasingly viable.

Creating a Market to Control Pollution

Benjamin Zycher*

Regulation of air and water pollution has proved to be one of America's most costly government activities. Until the 1960s, environmental protection was generally left to state and local governments. But in 1970, Congress passed the Clean Air Act, and President Richard Nixon established the Environmental Protection Agency (EPA) as an independent regulatory body. Streams of new legislation followed, including the Clean Water Act in 1972.

Since then, Congress and EPA steadily have tightened federal regulatory controls over air and water pollution, an approach that, ironically, often has hindered pollution abatement efforts while proving economically inefficient and costly in terms of resource use. The flaws in the Clean Air Act, for example, range from the lack of trade-off considerations between health risks and costs, to the failure to distinguish between major and minor ailments, to the inadequate evidential backing for some emissions standards.¹

Perhaps the most serious problem with current federal environmental programs, however, is the failure to design environmental regulations that employ, rather than conflict with, market forces. All too often the EPA, Congress, and environmental groups have opposed efforts to introduce flexibility in the federal regulatory scheme that would provide the same amount of environmental protection at less cost. One of the most egregious examples of this is the requirement, passed by Congress in 1977 and enforced by EPA in 1979, that utilities limit sulfur emissions in percentage terms. As a result, power plants must install expensive coal scrubbers

* The views expressed here are those of the author alone.

¹ See Robert Crandall, *Controlling Industrial Pollution: The Economics and Politics of Clear Air* (Washington, D.C.: The Brookings Institution, 1983).

even though use of low-sulfur coal, among other steps, would result in the same air quality at an estimated annual national savings of \$3.4 billion.²

Unconstrained market forces, of course, generally cannot lead to efficient uses of air, water, and other such resources “owned” by the public at large.³ Since such resources are held commonly, any given individual or group under most conditions cannot capture the economic benefits of protecting such resources. Nor do such individuals bear the full costs of their actions that degrade the environmental commons.⁴ Individual behavior under such incentives produces an externality, an impact on someone other than the resource user or owner, such as smoke drifting onto a neighbor’s property. The unregulated market therefore tends to lead to overutilization of common resources; this typically is defined as an “environmental pollution” externality problem. The real problem, of course, is not pollution *per se*, but overpollution, that is, a bias in the allocation of common resources toward polluting activities.

Over the last two decades, the typical government response to this problem has taken the form of binding standards for the rate of effluent release, or for specific equipment and other mandated aspects of industrial or market activity, such as coal scrubbers. These regulatory standards generally are inefficient in that they do not lead systematically either to the best uses of common resources or to given levels of pollution control at minimum cost. Specifically, the regulatory/standards approach does not attempt to find the most productive (marginal) use of common resources in both polluting and nonpolluting activities; it merely chooses a more or less arbitrary standard based upon quite imperfect knowledge of the adverse effects of pollutants and assumes that the extra pollution reduction yielded by better technology is worth the extra cost. This method does not even attempt to minimize the cost of achieving any given ambient quality level. Alternative policies that would yield more

² Paul Portney, “How *Not* to Create a Job,” *Regulation*, November/December 1982, p. 36.

³ Such “ownership” may be vested in the government or in no particular entity whatever. If “everyone owns the air,” then anyone can use it for any purpose, which is to say that no one owns it. That is, no one has powerful incentives to economize on its use.

⁴ A simple example is an individual driving an automobile, which emits pollutants into the air; that individual does not bear the full costs of the pollutants. Nor do other individuals have strong incentives to induce the driver to reduce his driving, since they cannot capture the full benefits of his doing so. These conditions, in the absence of government intervention, generally lead to “too much” pollution.

pollution reduction at a lower cost are available, however, and these policies would marshal market forces.

The Logic of a Pollution Rights Market

The appropriate goal of economic policy is the maximization of total social wealth. This occurs when scarce resources are allocated “efficiently”—that is, when the total value of all output produced from available resources is maximized.⁵ In most cases, only decentralized markets, responding to price signals emerging from a multitude of individual decisions, lead to efficient outcomes and hence to greater total wealth.

Prices are a set of signals coordinating consumption and production decisions by consumers and producers. Prices measure either the value of a particular good (the amount of other products consumers are willing to forgo for that good) or the value of resources needed to produce any particular good. Prices cause consumers to forgo consumption of goods for which production costs exceed the value of the good and spur producers to provide goods the value of which exceeds the production costs.

For any given production level, prices induce individuals to allocate supplies toward their most valued or productive uses. Any individual, for instance, valuing a good at less than its market price will sell it. Hence, prices maximize the value in the use of goods being produced and the total value, or productivity, of resources used in the production of goods.

Externalities prevent the market from yielding efficient outcomes in such cases as air and water, where property rights are not clearly defined and where it is difficult for individuals to negotiate the use of these resources. Large numbers of individuals compete to use these “commons,” but no individual can capture the full benefits of conserving them.

A pollution problem exists for air and water because private use of these resources imposes such externalities on others. And since users do not bear the full costs imposed, they undervalue the resource and tend to overuse it. Some economists conclude that this problem of externalities alone provides a sufficient justification for government intervention. But in order for government regulation to improve the allocation of resources, it must:

- allocate rights to use the commons such that the resource is allocated to uses of higher value;

⁵ While seemingly sterile, the “efficiency” goal is nothing more than the maximum satisfaction of human wants, given that not all such desires can be satisfied simultaneously.

- not create or exacerbate other significant inefficiencies in the economy; and
- not be more costly than the value of improved resource allocation generated by the regulations.

In sum, efficient regulation of environmental externalities should increase total value of aggregate production in the economy, including that of environmental amenities, by economizing on the use of commonly held resources.

There are three major regulatory options that could be considered in the case of pollution control. The first is regulation by administrative fiat or standards regulation. This approach typically takes the form of binding regulations on the quantity and composition of emissions. It is not unusual for such controls to extend to production processes, the uses of productive inputs, and the installation of particular types of equipment. Regulation by fiat attempts to induce economizing behavior through direct controls. Since public decision makers cannot be expected to have either the information or the incentives to formulate and implement efficient regulations, such direct controls cannot be expected in general to achieve efficient outcomes, except perhaps by accident.⁶ Indeed, standards regulation can lead to the cartelization of the affected industry.⁷

The second general regulatory approach is taxation, applied to each unit of effluent emitted. The tax is intended to provide polluting firms with incentives to recognize the social value of the commonly held resources. In its simplest form, the policy prescription is for a tax per unit of effluent, equal to the extra social cost, in terms of environmental degradation caused by that unit.⁸ Because this cost is difficult to measure, it is unlikely that the government actually would choose the efficient tax level. Even were this efficient tax known, government officials would appear to have few incentives to impose it; instead, they would be more likely to see the tax primarily as an opportunity to generate revenue.

As with standards regulation, taxation approaches are unlikely to lead

⁶ For example, the short time horizons of current decision makers—generated by limited tenures in office—provide incentives to formulate new protective rules that are inefficiently stringent and to modify old (overly strict) rules in order to dilute their impacts. The political benefits generated by formulating “tough” future standards accrue to present officeholders, while the political costs of enforcement are borne by their successors.

⁷ See, e.g., James M. Buchanan and Gordon Tullock, “Polluters’ Profits and Political Response: Direct Controls Versus Taxes,” *American Economic Review*, April 1972.

⁸ See William J. Baumol, “On Taxation and the Control of Externalities,” *American Economic Review*, June 1972.

to efficiency in either pollution levels or resource allocation. An effluent tax could be less expensive than regulation by fiat, however, because polluters would tend to choose the most efficient method to avoid the tax and thereby would reduce pollution.

The third general approach is to create markets in which rights to pollute are established by the government and traded by participants. Such pollution permits would establish property rights in the commons, causing market participants to bear the costs of both pollution and production forgone because of pollution controls. In this way, a more efficient level of pollution would result.

A pollution rights market reduces the costs of transactions between participants, forces polluters and nonpolluters to confront the true social value of environmental amenities when making their decisions, and reduces the total cost of pollution abatement by cutting out regulatory mazes and sizeable bureaucracies. Most important, pollution permits perform the function of property rights in the commons.

Creating a Pollution Rights Market

The simplest way to establish a pollution rights market would be for the Environmental Protection Agency to set a specific pollution level, that is, the amount of emissions allowed in a specific geographic area. (Pollution levels could be expected to be lower in the region surrounding Yellowstone National Park than in the Los Angeles Basin, for instance.) The government could then issue permits—either directly to existing firms or through an auction system to any pollution consumer—entitling the holder to emit a certain amount of pollutants over a certain period of time. These permits could then be freely bought and sold without additional government involvement.

A pollution rights market system would produce more efficient outcomes if one or both of the following conditions were included:

- all potential bidders had access to the market; and
- transaction costs between bidders were sufficiently low to allow retrading of rights.

These conditions require that the bidding for pollution rights not be limited to the effluent producers and the government. Restricting access to the market facilitates, though it does not guarantee, collusion among buyers.

There is, in addition, the problem of the “publicness” of the rights from the viewpoint of those who demand less pollution. Publicness is defined as

noncompetition in consumption; in other words, the consumption of the resource by one individual does not reduce the amount available for consumption by others. Because consumption of environmental quality by an individual does not reduce the quantity available, and because individuals cannot be excluded from enjoying the benefits of improved environmental quality, each individual has an incentive to press for nonpollution and let others pay for a cleaner environment. Economists call this the “free-rider” problem.

In the case of a large number of “small” demanders—and thus of potential free riders—the distortion in the pollution rights market may become important because the total demand for nonpollution may be large. This problem is difficult to overcome; the important question is whether inclusion of the government as a buyer in the pollution rights market would lead to correct signals of the real social demand for nonpollution. For this to occur the government would have to perceive the social value of nonpollution correctly, and it would have to have an incentive to represent these demands correctly. Yet it is not likely that either of these conditions would be fulfilled. For one thing, information about relative social values for nonpollution would not be available to the government; even personal preferences expressed through voting behavior might distort this perceived demand substantially.⁹ Moreover, the government would not have strong incentives to obtain the correct information, whereas the interest groups exerting pressure on the government would have incentives to distort information for their own advantage.

Furthermore, even given perfect information on the part of the government, there are few incentives for government to use this information as a means of achieving the most efficient outcome. This derives not only from the political pressures on government, but also from the fact that no individual or group within the government can capture the social gains of increased efficiency. Therefore, alternative institutional arrangements are needed to produce more efficient incentives for the government.

Institutional Parameters of a Rights Market

To create an efficient, collusion-free pollution rights market, the government needs to fix the available number of permits to pollute, allow resale of the permits, and allow anyone to buy and sell them. Within these

⁹ See, for example, James Buchanan, *Public Finance in the Democratic Process* (Chapel Hill: University of North Carolina Press, 1967).

parameters, important choices remain regarding the quantity of permits, the establishment of prices, the nature of the auction, information announced in advance, and the durability of the pollution rights.

The choice of the acceptable total level of pollution is likely to be the single most important aspect of the rights market. If the target level of total emissions were set too low, output would be produced with an inefficient mix of inputs. Total output would be reduced toward simple monopoly levels. But firms would earn only competitive returns because competition for pollution permits would raise the prices of those permits.

If the target pollution level were too high, on the other hand, efficiency would still suffer, unless the government became a participant in the market and bought some of the rights. And because some demanders of nonpollution would attempt to obtain a free ride on the efforts of others to reduce pollution, the problem of excess allowable pollution would not be solved by market competition. The government, of course, could purchase some of the permits, but it would be cumbersome for the government to produce too many permits and then buy back many of them.

The government also must establish the institutional framework of the market. The choices involved affect the behavior of the participants and thus the efficiency of the market. The government can choose to set both the quantity and the initial price—or just the quantity, in which case rules must be set for the auction. In particular, the government must choose between public and sealed bids, whether to announce the aggregate quantity in advance, and whether to allow rebidding. Finally, the durability of the pollution rights must be set: should permits be used only during a specific time period, during any single time period, or during all (or a finite number of) time periods?

Suppose, first, that the government announced both the quantity and the price. If the initial price were set below the free market price, buyers would obtain a windfall, unless competition for the permits required other types of expenditures. If the price were set too high, too few permits would be sold. If the government subsequently reduced the price on a second sales round, some firms would obtain permits at a lower price than others; original buyers would lose money. If there were no second round, industry output would be inefficiently small.

The durability of the pollution permits also has important implications.¹⁰ If each permit could be used during every future period, it would be difficult for the government to maintain a high price because buyers

¹⁰ See Ronald Coase, "Durability and Monopoly," *Journal of Law and Economics*, April 1972.

would recognize the incentive of the government to sell surplus permits at lower prices at some future time, tending to force the price down toward the competitive level. If, however, a “use it or lose it” rule were to hold—permits could be used only during the current period—the high price would be easier to sustain because buyers would not expect to suffer capital losses in the event of a future fall in price. Hence, greater durability of permits would help ensure competitive prices, thus improving the efficiency of the system.

Suppose instead that the government set only the quantity of pollution rights and allowed the price to be determined in the market. Sealed bidding would tend to destabilize any attempt at collusion, though free entry into the permit market would in any case reduce the chances of collusion.

It seems clear that sealed bidding coupled with submission of multiple bids by firms would tend to enable the government to behave as a discriminating monopolist. If government can be viewed as a revenue maximizer, sealed bidding would result in the degree of pollutants tending toward the competitive and efficient level. The same can be said for the durability of the rights: durability would reduce the ability of the government to produce only the monopolistic quantity of permits unless the government’s implicit or explicit promise to produce only the announced number of permits in the future is credible. Past government behavior in enforcing standards is unlikely to enhance this credibility. In any case, efforts to predict and hedge against future government actions are likely to consume resources and hence carry adverse efficiency implications.

Bidding, then, enables the market to avoid the costs associated either with attempts to capture windfall gains due to a low price, or with underutilization of permits caused by a high price. The efficiency outcomes of markets with bidding are subject to all these factors, but such markets are likely to avoid many of the distortions introduced by traditional standards regulation.

The Impact of a Pollution Rights Market on Industrial Structure

An industry with few firms would find it easier to collude if access to the rights market were limited to companies in the industry, in which case the collusive “monopsonistic” (a monopoly by buyers) price would be below the competitive equilibrium price. But production costs would be the same for all firms even if only one company held all the rights; this is true because the cost of holding or using a permit is the price forgone by not selling it. Since permits would decline in value for a given firm as it used more of them, the market itself would tend to prevent only one (or a very few) firms from monopolizing permits. Thus, potential new entrants

into the industry would face the same cost conditions as existing firms; a company holding all of the permits would enjoy a wealth gain through sales, but not a cost advantage. Thus monopsony in the permit market would not result in monopoly in the output market.

Would monopoly in the output market lead to monopsony (that is, a single buyer) in the pollution rights market? In the case of only one seller in the output market, the collusion problem does not arise because there is no incentive to cheat.¹¹ Thus, even with free entry into the pollution rights market, no one would be willing to pay more than the monopsonistic price for the permits because everyone would recognize that the output monopolist would be willing to pay only that price. With larger numbers of firms in the output market, however, the incentive to cheat on the monopsonistic agreement grows, so that the cartel would become less stable, and there would be more willingness on the part of rights market entrants to bid up the price of permits.

The creation of the permit market might reduce the number of firms in the industry because the price of an input—namely, units of the environment that can be polluted—rises from zero. This price increase pushes up costs, thus reducing industry output whether or not the rights market is monopsonized.

The Behavior of the Government

The pollution rights market would tend to be more efficient if government policy were designed to ensure that: 1) the market demand for nonpollution captured the full social value of environmental quality; and 2) the specific institutional arrangements discouraged both collusive behavior by buyers and monopolistic behavior by the government. And the free-rider problem would be reduced if nonproducers were permitted to purchase some permits and the government entered the market by announcing a price at which it intended to purchase, and thus withhold, pollution rights.

Individuals, environmental groups, and industries valuing increased environmental quality, such as outdoors recreation firms, could be expected to purchase some permits. And the inclusion of the government in the market would enable the social demand for environmental quality to be a factor in the market. There is, of course, a danger that the government would purchase too much nonpollution, but the existence of a speculative market and the incentive for government to obtain revenue by selling pollution rights would discipline the government, at least partially.

¹¹ There is an incentive to engage in discriminatory pricing, but this is not cheating in the cartel sense.

Taxpayers and beneficiaries of government programs would exert pressure on the government not to withhold “too many” permits from the market since sales would generate income, while other interest groups, particularly environmental organizations, would urge the government to sell fewer permits. So a crude political “market” would exist. Thus the free-rides problem, involving the social demand for nonpollution, might be reduced.

To forestall collusive behavior, the government should ensure access to the market by all comers and allow retrading and speculation in permits. Permits should be sold through decentralized exchanges, increasing the size and thus the likely competitiveness of the market. A centralized auction and sealed bids without announcement of the terms would destabilize attempts at cartelization.

It would still be difficult, as noted earlier, to ensure that the government would make socially efficient choices because the institutional structure under which government operates provides neither the information nor the incentives necessary to facilitate such decisions. However, the pollution rights market could be structured so as to prevent one particular problem: monopoly pricing of permits by the government. Durability of the permits would preclude such pricing, and speculation and resale would, over time, force the government to behave in a competitive manner.

In practice, what sort of behavior could be expected from the government? Were the government simply to award permits on the basis of some historical formula, competition among interest groups would generate complicated formulas and increasing regulatory intervention. In addition, this competition would lead to increasingly *ad hoc* decision making and a growing set of arbitrary criteria for allocation of pollution rights. Such effects were clearly observable in the administration of the Mandatory Oil Import Quota Program from 1959 to 1973.¹² The prospect of serious regulatory problems, coupled with pressures from beneficiaries of government programs interested in a new revenue source, would push government toward selling permits. Since a sale would impose windfall losses on the industry because firms would have to pay for permits to continue their current business activities, major polluters likely would pressure the government for some historical allocation of the initial rights.

If the revenues were earmarked for a particular program, there would be greater incentives for monopolistic pricing: interest groups benefiting

¹² See Kenneth Dam, “Implementation of Import Quotas: The Case of Oil,” *Journal of Law and Economics*, April 1971.

from the program would have an interest in maximizing revenue. These groups might be supported by other organizations interested in higher levels of environmental quality. These groups, of course, would be opposed by the industry, but industry pressure for lower permit prices would be present regardless of the use to which the revenues were put. Allocation of the revenues to the general fund, in contrast, could be expected to reduce the pressure for monopolistic behavior by the government, because changes in these revenues would have no significant impact upon any given spending program. Would government earmark the revenues or put them into the general fund? Probably the latter: at the outset, many interest groups would compete for the funds. One way for Congress to settle the dispute would be to give each group a share by putting the revenues into the general fund. Lobbying by the effluent producers would reinforce this incentive. Lobbying by groups benefiting from increased environmental quality would present the opposite incentive, but such groups tend to be diffuse politically.¹³

Conclusion

The issue is not the textbook performance of some ideal pollution rights market but the choice between alternative policies. Taxation approaches suffer from an incentive problem: government does not know the optimal tax, and there are few pressures on government to discover or implement it. The same problem exists in the pollution rights market, but there are opportunities for creating institutional arrangements to constrain such behavior.

Standards placed upon production processes suffer from similar problems: what is the correct standard or production process? What effect does regulation of this kind have upon monopoly power in the industry? And at what cost is pollution abatement purchased? Finally, pure *laissez faire* approaches suffer from obvious free-rider and transaction costs problems, leading to inefficient solutions.

The rights market approach has two powerful advantages: the prices of pollution and nonpollution are made explicit for all groups to confront; and careful organization of the market would reduce transaction costs

¹³ The issue arises, then, as to why we observe environmental policies at all. See Bernard Frieden, *The Environmental Protection Hustle*, 1979. See also George Stigler, "The Theory of Economic Regulation," *Bell Journal*, Spring 1971; and Sam Peltzman, "Toward a More General Theory of Regulation," *Journal of Law and Economics*, August 1976.

between competing groups. Moreover, any given level of pollution reduction would be achieved at minimum cost.

A pollution rights market has begun to develop on a small scale: EPA is allowing new construction in areas with dirty air when the manufacturer obtains an offsetting emissions reduction elsewhere; roughly 2,500 such “emissions trades” have been made around the country.¹⁴ Expansion of this modest approach into a broader program for the market allocation of the commons would represent a major improvement over today’s complex and expensive regulatory system.

¹⁴ Neil Orloff, “Climbing the Pollution Learning Curve,” *The Wall Street Journal*, November 5, 1985, p. 30.

Disposing of Hazardous Wastes: How to Deal with “Toxic Terror”

Milton R. Copulos

Love Canal, Hopewell, Santa Barbara—Kepone, DDT, Dioxin. The litany of chemical contamination goes on, always with the same message: man is poisoning the environment. Hardly a day passes without yet another well-publicized alleged environmental outrage perpetrated by a supposedly rapacious and irresponsible industrial sector. Ralph Nader has declared this the “carcinogenic century,” and the environmental establishment has laid the blame for the impending toxic disaster on the chemical industry’s “high degree of regard for short-term profits.” In essence, American industry is said to be poisoning the public in order to turn a quick buck.

Is this true? Is the U.S. in fact “faced with a serious, growing, health risk—exposure to toxic substances” from which our only hope of salvation is an all-powerful federal regulatory establishment? Is there really no way other than all-encompassing controls to manage the environmental risks related to toxic substances? Or perhaps has government interference with markets actually increased environmental risks? If so, might not reliance on the marketplace, which eventually resolved the much heralded “energy crisis,” offer a better alternative for managing environmental concerns? Indeed, might not market forces apportion risks and benefits better than is currently the case?

The Heart of the Matter

At the core of the toxic substances debate is the sweeping assertion by the environmental establishment and its political allies that the widespread use of man-made chemicals has spawned a cancer epidemic and

threatens to make the Earth virtually uninhabitable. Implicit in this broad generalization are a number of assumptions:

- 1) Anything made by man is “bad” by definition because it is synthetic. This position was stated succinctly by J. O’M. Bockris, editor of *Environmental Chemistry*, when he declared “Man is the original and basic pollutant.”
- 2) Technological advance, especially after World War II, has been harmful because it accelerated the introduction of synthetic substances into the environment. As a consequence, technology itself, not just specific products, is “bad.” Many within the environmental establishment would bristle at the suggestion that they are anti-technology, but their rhetoric, filled with phrases about “industrial technology ravaging the Earth,” belies such denials.
- 3) Industry knowingly introduced hazardous substances into the environment, merely to maximize short-term profits. This unbridled avarice, it is claimed, makes industry untrustworthy, and by extension, free enterprise, with its reliance on the profit motive, a pernicious and corrupting system.
- 4) Government regulation offers the only means of protecting man from himself, and thus of saving the planet from chemical catastrophe. As one environmental publication states: “Individuals cannot protect themselves against toxic substances in the environment. They have to rely on government.”

Do these assumptions by environmental activists accurately reflect reality? Even a cursory review of the scientific literature concerning environment reveals that the answer is “no.” Tragically typical of the literature from environmental activists is the lack of balance. To be sure, there have been problems with toxic substances, either through misuse or because of unanticipated health effects. But the risks posed by these substances must be weighed against their benefits. Nonetheless, many extreme environmentalists ignore the gains from technology.

This was the case with Rachel Carson’s famous 1962 book *Silent Spring*, which helped launch the environmental movement and its underlying anti-industrial, anti-technological ideology. While tame by contemporary standards, the basic premise of Carson’s work was that mankind was poisoning the food chain with artificial pesticides and fertilizers. Carson helped establish the basic villains: industry, technology, and the free enterprise system. The book set the tone of imminent catastrophe that was to characterize so many of its imitators. More important, Carson failed to acknowledge honestly the benefits of modern agriculture.

This failure is perhaps best illustrated by Stanford biologist-ecologist

Paul Ehrlich. In 1966 only ten nations were producing more food than they consumed, and three of them, the United States, Canada, and Australia, were responsible for the bulk of the world's food surplus. Instead of viewing this as a testament to the progress made by modern technology toward defeating hunger, one of man's traditional enemies, Ehrlich managed to turn it into a defeat for man through advocating his theory of the "population bomb" and spreading the fear that the growing population could not be fed.

Ehrlich's "population bomb" was a dud. In fact, the U.S. and many other countries have achieved virtual zero population growth without the draconian measures Ehrlich thought would be necessary. Moreover, a basic element of Ehrlich's and Carson's thesis, that the use of chemical fertilizers and pesticides in food production would help precipitate a world famine by poisoning the food chain, has failed to materialize as well.

While it is true that overpopulation and starvation are problems in the Third World, their cause is not found in an inability to produce food—or even in the burgeoning population statistics. Rather, what has come to pass is that, in many Third World nations that adopted Marxist or socialist economic systems, market incentives to produce food have been destroyed, and as a consequence starvation exists. This starvation, however, is the direct consequence of political intervention and economic policy.

Predictions by other apostles of the chemical apocalypse, however, are even further off target than are Ehrlich's. For example, the Club of Rome report sponsored by a group of scientists from MIT predicted pollution would cause the end of civilization by the year 2005, less than two decades from now. George Wald, Harvard scientist and Nobel prize winner, went even further, predicting the end of civilization by as early as 1985. In neither case does it appear that the predictions will come true, and yet their authors have yet to repudiate their sensationalistic claims. Moreover, to even mention such inaccuracies is certain to bring forth a firestorm of criticism from both the professional environmental community and their sympathizers in the media.

When the environmental establishment encounters opposing views, those holding them too often are dismissed as "tools of big business" or as having a "vested interest," whether or not there is any factual basis for the accusation. Yet the environmentalists rarely admit that the generous funding they receive from federal, state, and local government agencies could influence them toward greater government regulation or cause them to have a "vested interest" in expanding the scope of government.

Most important, there are reasons to doubt the factual bases of the claims made by the environmental establishment. Is there, for instance,

really a “cancer epidemic?” If there is, it should be evident in at least two basic statistics: the mortality rate for cancer and overall life expectancy. Yet reports American Enterprise Institute scholar and political theorist Ben Wattenberg in *The Good News Is the Bad News Is Wrong*, the cancer rate, when adjusted for age, declined by 3.9 percent during the 24-year period from 1947-1948 to 1969-1971. And the decline occurred despite a sharp increase in the amount of cancer related to smoking and alcohol abuse. Lung cancer alone, for instance, more than doubled during the same period. Excluding lung cancer from the calculation results in a 11.3 percent drop in the overall cancer rate. More important, this decline in cancer rates, with the exception of smoking-related cancer has continued. Reports by the Department of Health and Human Services in 1980, and the National Research Council in 1982, have confirmed the decline documented during the 1957 to 1969 period.

Even more important are the data that life expectancy has been increasing. If, as some environmentalists argue, diseases in addition to cancer are caused by exposure to toxic substances, this should manifest itself in a drop in overall life expectancy rates. But since the 1940s, notes Wattenberg, life expectancy for American adults has increased steadily, and reached the highest rate in modern history during the 1970s. In short, the scare stories of a “cancer epidemic” and a poisoned Earth simply have no basis in fact. Of course, environmental activists need to ignore the facts, for if there is no crisis, then there is no rationale for seeking massive government programs and substantial federal intervention in the marketplace.

This is not to say that there is no need to protect the environment or to handle some substances and materials with special care to ensure the public’s safety. Nor does the absence of a cancer epidemic mean there are no potential hazards associated with new products and technologies. The record shows, however, that the risks created by the introduction of new substances into the environment by and large have been well managed, and there is no reason to believe that they will not continue to be managed well in the future. The U.S. simply does not face an imminent chemical catastrophe.

Environmentalists like to paint an idyllic image of pre-industrial society as a pastoral life free of the hazards and pollutants associated with modern technology. This vision of a pristine, risk-free “natural” Earth is a romantic myth. It is not necessary even to look to the obvious hazards—floods, earthquakes, fires, and storms—to discover that nature is not always benign. Common health hazards in medieval and much later societies included infection, impure water, malnutrition, and plague just to name a few. Rampant disease was common. Moreover, many widely

consumed foods, such as honey, lemons, mushrooms, and soybeans, contain natural substances known to be carcinogenic. Even the humble potato is suspect. Many of these foods pose other health hazards. Potatoes contain a relatively high degree of arsenic, for example, and honey often contains botulism spores.

Nor is food the only commonly encountered “natural” health hazard. Nearly a quarter of the elements occurring in nature are carcinogenic; indeed, a fifth of the nonradioactive elements are. Similarly, 19 percent of all elements and 24 percent of stable elements have been shown to cause birth defects. Vitamins have been found to cause cancer, and even oxygen, under certain circumstances, can be harmful. In the case of milk, the natural version poses enormous health risks that can only be eliminated by the technologically developed process of pasteurization. In short, Earth, in its natural state, does not present a risk-free environment, and the fact that something is “natural” does not automatically mean it is safe. It was not industrial society that prompted Hobbes to comment that life is “nasty, brutish, and short” or Tennyson to write of “nature, red in tooth and claw.”

Superfund

Once the “natural is good, man-made is bad” fallacy is recognized, the logic of the environmental establishment’s assumption that the introduction of new substances and technologies is bad also comes into question. Nevertheless, environmentalists remain loath to measure either costs or benefits. One of their favorite whipping boys is the chemical industry.

During the 1985 congressional debate over extension of the Superfund program, originally passed in 1980 to clean up abandoned “orphan” toxic waste sites, the environmental activists argued that tens of billions more dollars were required to clean up the nation’s hazardous wastes. They demanded a nearly ten-fold increase in the Superfund’s authorized expenditures, from its original \$1.6 billion to \$13.5 billion. Cleanup costs, according to Superfund activists, eventually will hit \$40 billion. Moreover, their plan called for Superfund’s money to come from the chemical industry, claiming that it is responsible for generating toxic wastes.

These arguments ignore chemical substances’ contributions to modern society. Nor do they seem concerned that legislation that undermines the U.S. chemical industry’s competitive position will threaten the 30,000 Americans directly employed by companies, the one million Americans working in chemical-related industries, and the economic growth that benefits all Americans.

Also ignored during the Superfund debate was the extent of industry's investment in developing and improving hazardous waste disposal technologies. In fact, voluntary industry expenditures will be roughly equivalent to federal outlays. The existence of this considerable investment serves as a *prima facie* refutation of the contention that businesses knowingly pollute to maximize profits. Were this the case, firms would not spend more than \$10 billion voluntarily to clean up toxic substances.

Companies have made these expenditures because it is in their long-term interest to avoid poisoning the environment. Widespread and dangerous dumping inevitably would result in calls for increased government regulation and create enormous potential legal liabilities. Firms, moreover, are not monolithic artificial intelligences. They are made of people who are no more interested than anyone else in living and working in a poisoned environment.

Another disturbing aspect of the Superfund debate is the environmental establishment's reflexive reliance on government action—especially direct command and control regulation—as the optimum means of solving environmental problems. Already more than 30 federal laws regulating the environment are on the books, and tens of thousands of bureaucrats are employed by federal, state, and local agencies to enforce these statutes. Yet this approach, advocated so fervently by environmentalists, appears to have made no progress, at least if the rhetoric of environmental groups is to be trusted. According to them, pollution is growing worse each day.

Realistic Approaches to Hazardous Waste

Spending on pollution abatement increased dramatically during the 1970s. Federal expenditures alone more than tripled between 1973 and 1982, and annual capital expenditures related to the environment by all sectors of the economy rose from \$18 billion in 1973 to \$60 billion in 1981. As a consequence, most Americans are now served by municipal wastewater treatment systems, while industrial discharge of effluents has been dramatically reduced. The most impressive progress, however, had little to do with federal regulations.

A Market Approach

Although a number of specific technologies were mandated to cut auto exhaust emissions, progress was slow initially, partly because the new pollution control equipment greatly increased fuel consumption. As a consequence, even if the amount of pollutants released into the air with

each gallon of gasoline were reduced, more fuel had to be burned to travel a set distance, and the overall level of pollution was not reduced as much as the law's authors predicted. In fact, by 1973, the year of the OPEC embargo, overall automobile fuel efficiency reached its lowest point in history, averaging only 13.1 miles per gallon (mpg) of fuel. Over the next six years, only modest improvements in U.S. auto efficiency occurred, largely because there was no economic incentive to use less fuel. The cost of a gallon of gasoline increased by only 4.3 cents in constant (1972) dollars between 1973 and 1979 and remained well below \$1 per gallon.

In 1979, however, the situation changed radically with the imposition of an embargo on petroleum and petroleum products from Iran and with a series of precipitous price increases by OPEC. Retail gasoline prices topped \$1 per gallon for the first time. Simultaneously, the federal government botched its attempt to allocate oil supplies, transforming a nominal 5 percent shortage of crude oil into regional shortfalls of as much as 30 percent at the gasoline pump. Motorists had to wait in seemingly interminable lines to make closely rationed purchases, while prices rose almost daily—despite federal price controls. It was a predictable demonstration of what happens when government controls price and allocation of any commodity: prices rise and shortages grow. As predictable, however, the 1979 shortages, gasoline lines, and price increases created an economic incentive for widespread energy conservation. In short time, fuel economy became the primary concern of many American automobile buyers.

As a result, petroleum consumption declined sharply. By 1982, overall U.S. petroleum consumption had fallen by nearly 20 percent from its 1978 peak—despite the addition of millions of new automobiles to the U.S. passenger vehicle fleet. More total miles were being driven, but gasoline consumption had been reduced. This meant that the amount of auto pollutants spewed into the atmosphere fell by a similar amount. For this, market forces deserve a large share of the credit.

Until 1981, the federal government consciously tried to keep gasoline prices low. In addition to badly skewing the energy market, federal price controls encouraged the inefficient use of motor fuels, the auto buying public tended to purchase cars without consideration of fuel efficiency, and auto emissions were not reduced. President Reagan's acceleration of price decontrol in 1981 created the incentive for conservation, causing prices to decline and supplies to increase.

The lesson: the efficiency and expediency of the market offer a rational approach to environmental pollution in general and to toxic substance control in particular. Had the market been allowed to operate without interference following the 1973 oil shock, the U.S. probably would not have been vulnerable in 1979. Prices would have reached equilibrium

levels much earlier, creating the incentives to conserve much earlier; the corresponding increase in auto fuel efficiency and reduction of automobile emissions therefore would have occurred sooner as well. Seldom has there been so clear an example of the ability of the market to produce the salutary results government regulation was unable to provide.

Government Control of "Externalities"

A second area of enormous environmental progress is the reduction of radioactivity. Here again, it is not federal environmental regulation that deserves the credit. Rather it was the ban on atmospheric testing of nuclear weapons, an event unrelated to environmental concerns. The ban's effects were remarkable. Between 1965 and 1983, the level of Strontium 90 in milk fell by 87 percent, while the level of Cesium 137 dropped by 97.6 percent.

This reduction illustrates how government can control what economists refer to as "externalities." Externalities are the economic effects of an activity or transaction, the impact of which falls on individuals who did not participate in the activity or transaction. Individuals by themselves would not be able to do anything about the increased levels of radioactive isotopes in the atmosphere. And since the pollution was a consequence of action by various governments, conventional market forces could not resolve the issue. Only governments could.

Eventually, governments agreed to halt atmospheric testing. It was a simple and minimal, but extremely effective, response to a problem. There was no attempt to establish a complicated regime of tests to monitor levels of radioactive isotopes in the atmosphere or to regulate the international sale of milk products. When the source of the problem was eliminated, that was all that was required.

Toward a Rational Government Toxic Waste Policy

The auto emissions and radioactivity pollution cases illustrate two key guidelines for a rational government policy toward toxic waste issues: the marketplace should be used when possible; and when some government action is warranted, it should be kept to the minimum.

In addition, local authorities generally should be responsible for toxic waste issues. Federal intervention should be considered only as a last resort, because there are significant regional and even local differences across the nation, and "top down" environmental management inevitably leads to inefficiencies caused by a lack of understanding or adaptation to local conditions. For example, the federal Environmental Protection

Agency (EPA) once refused to grant permission for the construction of an oil refinery near Hampton Roads, Virginia, because the area was in violation of the federal Clean Air Act's permissible levels of hydrocarbon emissions. This was correct, but the excess emissions originated in the nearby Great Dismal Swamp, where methane gas was being generated by decaying plant and animal matter in such large volume as to violate the national air standards. The firms that wanted to build the refinery, therefore, were penalized because nature did not comply with the law.

Similarly, attempts to build a power station adjacent to a coal mine in Utah were blocked by the EPA because the Agency claimed that the area already was in violation of the federal Clean Air Act standards for "particulate matter." The proposed location was in the middle of a desert, and as might be expected of a desert, the area was quite dusty. "Particulate matter" was EPA's way of describing dust, and indeed, the level of dust that occurred naturally exceeded that allowed by the Clean Air Act rules.

These examples illustrate the difficulty inherent in drafting national rules, whether for toxic wastes or any other form of pollution. In a country as large as the United States with vast regional climatic and ecological differences, any attempt to impose a national regulatory regime inevitably creates inefficiencies and inequities. For example, the Clean Air Act's requirement that flue gas desulfurization equipment or "scrubbers" be installed on all coal-burning facilities needlessly penalizes utilities that could burn low-sulfur coal more cheaply as well as the Western mines that produce the low-sulfur coal.

Regulations governing toxic waste disposal also should avoid mandating specific technologies for particular environmental problems. This in effect freezes technological progress and provides little incentive for firms to improve the technological base, since the introduction of any innovation would require its inventor to convince Congress or the regulatory agency to revise the regulation. Reliance on a specific technology, moreover, ignores the possibility of varying regional conditions and the potential of cheaper alternatives, which is likely to penalize some industries or companies and benefit others. Finally, there is the very good chance that the technology mandated might not provide the most efficient equipment for every prospective application.

Guidelines for a Toxic Waste Policy

The four principles that underlie a rational approach to these issues thus are:

- 1) rely on the marketplace to the extent practicable; but when government intervention is necessary,

- 2) limit government action to the minimum necessary to achieve the desired goal;
- 3) assign the responsibility for enacting, executing, and enforcing regulations to the lowest level of government competent to perform the task;
- 4) use performance standards, rather than detailed, specific technological mandates, to manage environmental problems.

These principles can be applied to the disposal of toxic waste. It must be recognized, however, that the toxic waste problem comprises two separate areas of concern: orphan waste disposal sites and those where the ownership is known.

“Orphan” Disposal Sites

An “orphan” toxic waste disposal site is one where the party responsible for dumping the toxic materials either cannot be identified or is not financially capable of underwriting the cost of proper disposal. By and large, such dumps are very old, predating national concern over toxic substances or the technologies for their safe disposal. Typical of the orphan sites is the current or imminent leakage of toxic matter into the surrounding ecosystem, posing a real threat to the nearby population.

Public pressure on Congress following the revelation of several potentially dangerous orphan sites gave the initial impetus to the so-called Superfund. There remains, however, widespread misunderstanding as to the exact scope and nature of this problem. When environmental activists refer to the toxic substances issue, they frequently claim that there are tens of thousands of hazardous waste disposal sites around the nation. This figure, however, includes all waste disposal sites, not just orphan sites.

Orphan sites probably number less than 2,000. Cleaning them up may be a legitimate federal responsibility for a number of reasons. First, there is, by definition, no responsible party to whom the public can turn to demand a cleanup. Second, the substances were probably produced throughout the nation and only by an accident of circumstances have ended up causing the cleanup problem at the one particular local site. Third, the leakage of hazardous substances from a disposal site, in some instances, can cause adverse health effects over a relatively broad area, depending on the substance. Finally, the task of cleaning up a toxic waste dump is often beyond the financial capability and technical competence of local governments and even of many state governments.

The potential need for federal involvement in such cases, however, does not warrant the creation of the Superfund program, a \$1.5 billion pro-

gram to clean up hazardous waste sites, financed by a tax on oil and natural gas, which are the feedstocks used to make petrochemicals. The Superfund was established on the theory that the industries responsible for generating the toxic wastes dumped in orphan sites should be required to pay the cleanup cost. But this ignores the essential fact that orphan sites, by definition, are the ones where the responsible parties, the industries involved, are unknown.

Advocates of the Superfund counter that the specific industries that create the feedstocks from which petrochemicals are manufactured should be held responsible. However, petrochemical feedstocks, and indeed petrochemicals themselves, are not the principal source of toxic wastes. Virtually every segment of the U.S. manufacturing community generates some form of hazardous wastes in greater or lesser amounts. Superfund ignores these sources of toxic waste and instead focuses on a narrow segment of U.S. industry and burdens it with the full cleanup cost, even though its role in generating the wastes is relatively small.

A more appropriate approach to the cleanup at orphan sites would be funding out of general Treasury revenues. If the issue is in fact one of externalities and government action therefore is warranted, then the monies to finance the effort should come from general tax revenues, as in the case of the EPA itself. To rely instead on a special tax of a narrow segment of industry is inequitable and creates distortions in the marketplace.

Disposal Sites Where Ownership Is Known

While there may be a rationale for a direct governmental role in cleaning up so-called orphan toxic waste dumps, in the case of sites that are currently in operation or where the responsible parties are known, no such rationale exists. While the concept of externalities is relevant to the toxic waste issue, other factors also warrant consideration. Chief among them is the "polluter pays" principle, which has been held up as a cornerstone of toxic waste policy. Put simply, it states that parties responsible for polluting the environment should also be responsible for cleaning up the pollution they cause. According to this principle, the reason for Superfund is that no party with clear responsibility for orphan sites can be identified. This is not true with regard to disposal sites that are in current operation or where ownership is known, which, therefore, require a different approach to toxic wastes.

The most efficient, and environmentally advantageous, approach is to use market mechanisms to minimize the amount of pollution discharged in the first place, so that the need for a cleanup is reduced. This can be accomplished by using a combination of performance standards and tax incentives that approximate the operation of a market.

One way to do this would be to place a tax on toxic waste emissions in excess of an established national standard. At the same time, the tax should be refundable if emission levels were below the national standards. This system would penalize firms that polluted and reward those that did not. The greater the reduction in emissions of a toxic substance below the standard, the greater the financial reward.

Such a system would actually create an incentive for companies to improve technologies for reducing toxic waste emissions and would directly reduce the cost of installing such improvements because of the refundable nature of the tax. The creation of such incentives is important in order that the ceilings for toxic waste emissions permitted under national performance standards do not become floors—all too often, companies view performance standards not so much as a limit beyond which they cannot go, as a level up to which they can freely pollute.

Most important, a system of “pollution taxes” would closely resemble the operation of a market, and therefore would not confer a special advantage to any particular company or technology. This would permit firms to bring the full measure of their expertise and innovation to developing new and more efficient methods of reducing pollution, and would give those firms that succeeded in this effort a market over those that did not.

Conclusion

Toxic wastes are not threatening the existence of our planet. Neither cancer rates nor overall mortality levels support the notion that a chemical catastrophe is at hand. Rather, the statistics indicate that the rapid advance of technology during the post-World War II era has prolonged and enhanced the life of the average American.

This is not to imply that there is no need for concern about minimizing degradation of the environment. To achieve this, however, the benefits of strict environmental regulation must be balanced against the costs of restricting industry output and slowing technological advance. A rational framework for solving environmental issues would be based on four principles: relying on markets wherever possible; but when government actions are necessary because of externalities, minimizing the government actions; keeping environmental rules at the lowest possible level of government, and basing such environmental rules on performance standards and market-oriented mechanisms.

The U.S. currently spends some \$60 billion annually for environmental protection, and this grows every year. Much of this is spent inefficiently,

with little prospect of returns commensurate with such enormous expenditures. This is not because there is a lack of technical capability, but rather, because current environmental rules make little or no attempt to use the marketplace to help allocate resources and balance benefits and costs. Increasing reliance on the marketplace not only would reduce costs, it would better protect the environment and allay irrational fears of possible hazards.

Getting from Here to There

Doug Bandow

Over this century government resource policy has shifted dramatically from private to public management. Federal intervention in such environmental matters as air and water pollution, toxic waste disposal, and protection of endangered species has accelerated, reaching flood stage in the 1970s.

Conservationists, convinced that the prime threat to the environment was the private sector, promoted this steady expansion of federal power. Their view was simple enough: If only disinterested public servants, instead of profiteering private interests, were to act as stewards of America's resource endowment, the country's ecological future would be secure.

But as the articles in this volume detail, Uncle Sam has not proved to be a disinterested caretaker. With disturbing frequency, federal environmental policies have served powerful private interests rather than the overarching "public interest." Incorruptible scientific managers envisioned by conservationists as guarding the public domain seem strangely absent from government; the processes of bureaucratic selection and congressional election produce custodians who often seem more interested in selling their services than in protecting their charges.

None of this was intended, of course. The trouble is that the current paradigm of public environmental management is incapable of solving or even explaining the problem. Indeed, as the failure of government control becomes more widespread and costly, the participants in the current system simply respond reflexively by pushing for more of the same. The environmentalists call for better bureaucrats; the bureaucrats, in turn, assert that nothing is wrong—at least nothing that cannot be remedied with more staff, money, and authority; and Congress votes to give the bureaucrats more funds, staff, and authority.

Expanding government control, however, merely exacerbates the underlying problem because the failure of public stewardship is an institu-

tional one. As John Baden points out in his essay, the current federal resource management model was designed by the Progressives during America's philosophical counterrevolution earlier this century as the government shifted from protecting private decision making to asserting public control. The Progressives had an optimistic, but unfortunately, hopelessly unrealistic, view of human nature: they thought divesting property managers of any economic interest in the environment would ensure scientific utilization and permanent protection of its resources.

Yet creating independent, disinterested custodians of America's natural endowment had precisely the opposite effect: the environment, like citizens' incomes, became just another resource, subject to redistribution by the special interests that dominate government policy. As Baden explains, bureaucrats are self-interested individuals before they are public-spirited resource trustees. Officials in government act as do most other human beings; they tend to put their personal and institutional interests ahead of an ethereal public good.

As observers began to recognize that the problems of the traditional environmental regulatory model were endemic to the system itself, a new paradigm of environmental protection, the so-called New Resource Economics, was born.

Thus, argues Baden:

Move environmental decision making out of government as much as possible.

Only in this way can those controlling resource use be held accountable for their decisions. For land and other natural resources, the divestiture from government can be total. In the case of common pools, such as air and water, some federal involvement is inevitable, but the efficiency of that intervention can be improved significantly.

Create a Bureau of Budgetary Control to act as a predatory bureaucracy, feeding on the pork barrel projects proposed by other agencies.

To combat the treatment of the Treasury as a common pool resource—that is, to eliminate the overuse that naturally results when benefits to users are concentrated while costs to owners are diffuse—Baden proposes turning the pathology of government growth against itself.

Despite the professed commitment of Ronald Reagan to the basic philosophical principles that underlie the New Resource Economics and the traditional Republican Party support for environmental protection, the Administration has pursued confrontation rather than the enlightened cooperation proposed by NRE economists. As Nolan Clark explains, Reagan's first Interior Secretary, James Watt, had a clear vision of the things he wanted to accomplish, but reshaping resource policies along market lines apparently was not one of them. The problem was that Watt,

too, believed in the bureaucrat as a scientific manager, as long as the bureaucrat was kept under firm control.

The situation was even worse at the Environmental Protection Agency, writes Clark. Anne Gorsuch Burford had no real agenda. She sought to cut agency outlays and the regulatory burden on business, consistent with overall Administration objectives, but she defended command-and-control regulation, which is costly and unnecessary.

Though both Watt and Burford departed from the political scene long ago, the ruins of their policies remain. The invective level between Administration figures and environmentalists has receded, but the bitter policy disputes seem only to worsen while the little cooperation now occurring between industry and conservation groups continues despite, not because of, Administrative initiatives.

The chapters by Benjamin Zycher, Terry Anderson, and Milton Copulos show just how disastrous has been this failure in communication between environmentalists and Administration free market advocates. Conservation is not incompatible with free markets and private property; indeed, in numerous practical cases, including air and water pollution, land and wildlife management, and toxic waste disposal, reliance on market principles would yield better environmental protection at lower cost. Yet the Reagan Administration has reinforced the environmental myth that the free market means big business fouling the atmosphere, raping pristine wilderness lands, and discharging carcinogens into drinking water supplies.

Air and water pollution is a serious problem, observes Zycher, because individuals do not bear the full cost of the emissions they spew into what is a national commons. Where the resource, like air, cannot be owned privately, the pollution "externalities" from economic activity must be controlled by government.

Today the public response to contamination of the great air and water common pools takes the form of command-and-control regulations with disastrous results. Compliance costs are inflated and, warns Zycher, standards regulation may even promote cartelization of affected industries. Zycher's alternative is to:

Create a pollution market, where emission rights can be freely traded.

If the system were structured correctly, Zycher writes, there would be no reason to fear collusion between firms. Moreover, environmental groups could be given the same freedom as anyone else to purchase permits; in this way, conservationists could help clean the environment without relying on the political process. Though a pollution market would be difficult to run well, since the total amount of allowable emissions and other issues would be matters of some contention, the system would be

superior to any alternative, particularly the current regulatory model.

The potential role for the market is even greater in terms of land and wildlife management. Anderson proposes:

Privatize the resources now under federal control to change the current perverse incentive structure.

While federal subsidies encourage environmental destruction, notes Anderson, private land ownership by such groups as the Nature Conservancy and the Audubon Society has aided preservation and reconciled environmental objectives with the commercial use of resources. Clearly, not only conservation groups have an interest in protecting America's natural heritage. Profit-seeking entrepreneurs and firms, too, "care" about the environment. Their interest may be mercenary, but the result of ownership incentives is the increase and improvement of natural amenities.

The disposal of toxic wastes, argues Copulos, does not require the massive programs of federal intervention now being promoted by many environmental groups. So he advances several reforms in federal hazardous waste policy:

Limit federal support to so-called orphan sites, where no responsible, or solvent, private party exists. Fund clean-up efforts out of general revenues with other levels of government helping clean up the dumps in their jurisdictions. Restrict future dumping either by taxing waste discharges or setting up an emissions market.

The health threat of negligent disposal of hazardous substances is real, of course, but the danger should not be overstated. Unfortunately, writes Copulos, the current Superfund program is badly flawed. It unfairly distributes the clean-up burden, mishandles tort liability rules, and places too few responsibilities on state and local governments. The Superfund also threatens to become yet another endless national pork barrel, related more to congressional election needs than to U.S. health concerns.

An Agenda for the Environment

The recommendations in this volume would require extensive and major reforms. Unfortunately, by failing to delineate a clear environmental policy, let alone a market-oriented policy, the Reagan Administration thus far has squandered its opportunities to effect fundamental regulatory or legislative changes. The Clean Air Act, the Clean Water Act, and the Superfund have all come up for reauthorization, but the Administration has proposed no fundamental changes in any of them.

In its two remaining years, therefore, the Administration should pursue the following modest goals:

1) *The Interior Department and EPA officials should use their discretionary authority to introduce market incentives where possible.*

The EPA could extend the so-called bubble concept to water pollution, for example; the Bureau of Land Management and the Forest Service at least should manage grazing and forest lands in a manner designed to cover costs.

2) *Reagan should offer an experimental, but omnibus, environmental privatization program.*

A small portion of federal land could be selected for divestiture, for example, with park land, wilderness areas, and wildlife sanctuaries transferred to environmental groups, timberland to lumber companies, and rangeland to ranchers.

3) *The Administration should push Congress to introduce flexibility into the most rigid air and water regulations.*

The coal scrubber rule for utilities should be scrapped; restrictions on the banking of emissions "offsets" resulting from additional, voluntary reductions in discharges should be eased. The EPA should seek authority to design a limited program of emissions fees or transferable discharge permits to test the feasibility of such market solutions.

4) *The Interior Department and the EPA should draft comprehensive proposals to expand any interim market-oriented policy changes.*

Though the Administration's first attempt to privatize federal property flopped, a successful experiment might make more fundamental reforms politically feasible. And a major privatization initiative would have a far better chance of passage if the President proposed it as a means of better protecting America's resources rather than simply as a revenue raiser.

5) *The EPA should prepare major legislative reforms for the Clean Air and Clean Water Acts and the Superfund program.*

The Superfund and Clean Water Act are up for reauthorization this year, which leaves the Administration little time to act, but amendments can be offered at any time. If a badly divided Congress merely continues the Superfund for another year, which seems likely, Reagan will have an important opportunity to propose fundamental change when the entire program will be under scrutiny. And if a test of pollution fees or marketable rights succeeded, Congress might be more receptive to an Administration proposal to shift the overall direction of pollution abatement activities from command-and-control to a system of economic incentives.

The theoretical and empirical evidence supporting a market-oriented approach to environmental protection is overwhelming. The problem, of

course, is to translate that support from the world of intellectual journals to the political arena. Unfortunately, the Reagan Administration, through its confrontational, yet anti-market, environmental stance, has made this task more difficult. But there are signs of hope. The tentative movement of some environmental groups and energy companies toward a more cooperative relationship, for example, offers the glimmerings of the potential sea change in attitudes on both sides that just might be possible.

It took roughly a century for the government to decide that vast stretches of public lands should be held for the greater good, instead of transferred to private citizens across the nation. It took roughly another century for people to realize that public management was not working well and that the greater good actually might have been served had Uncle Sam's holdings ended up in private hands. Now policy makers must make sure that it does not take another hundred years for government to start acting on that knowledge by transferring resources back to private control.

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Protecting the Environment: A Free Market Strategy

In recent decades federal intervention in environmental matters—air and water pollution, toxic waste disposal, wilderness preservation—has grown at an accelerating pace. The result has been a series of command-and-control regulations that have proved expensive, ineffective, and often counterproductive.

The theory behind government intervention was simple: if only disinterested public servants, instead of profiteering private interests, acted as stewards of America's resource endowment, the nation's ecological future would be secure. The reality of the political process has turned out quite differently. With disturbing frequency, federal environmental policies have served the goals of powerful private interests rather than the common good.

There is an alternative system of environmental protection that is gaining increasing recognition. Popularly called the New Resource Economics, this approach relies on market forces and property rights. Clean air could be ensured through pollution rights markets, wildlife refuges managed by environmental groups, and toxic waste disposal enforced through clear tort rules. In each case, ecological values would be better protected at less cost than they are now by the reams of regulations and legions of bureaucrats.

So far, however, the Reagan Administration has failed to introduce these environmental reforms. Yet it is not too late for Ronald Reagan to press for those changes in law that would give market forces and property rights the chance to preserve and safeguard the environment. Were he to do so, environmental protection could become one of his most important political legacies to the American people.

This volume analyzes the problems with current environmental protection strategies and offers an agenda for the New Resource Economics.



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