

CLEAN PROFITS

Using Economic Incentives To Protect the Environment

ROBERT N. STAVINS

The new breeze blowing in Washington is carrying with it fresh consideration of a promising breed of unconventional environmental policies—ones that embrace market forces, not just as an element of the problem, but also as a fundamental part of the solution. While conventional approaches to environmental problems have in some cases been effective in the past, when faced with today's problems they tend to pit economic and environmental goals against one another, producing paralysis rather than progress. Economic-incentive approaches, on the other hand, make the market a partner, rather than an adversary, in the search for environmental protection. As a result, such approaches can help break political logjams and facilitate real progress on various environmental fronts. While such market-based mechanisms are no panacea for the country's myriad environmental problems, these innovative approaches merit serious consideration as a supplement to the existing policy framework.

It is now nearly two decades since Earth Day marked the beginning of the modern environmental movement. In the intervening years, a host of environmental laws and regulations have been enacted, and substantial gains have been made: in many spheres, the environment is cleaner now than it was before. But the U.S. and the world continue to face numerous environmental threats—both newly recognized problems, such as global climate change, indoor air pollution, and ground water contamination; and ongoing threats from acid rain, urban smog, and public land degradation.

In many instances, we seem to have little trouble identifying our environmental goals; the problem has been designing effective mechanisms for achieving those goals. With this in mind, Senators John Heinz (R-Pa.) and Timothy Wirth (D-Colo.) initiated and sponsored Project 88, a bipartisan effort to find innovative solutions to major environmental and natural resource problems. Although Senators Wirth and Heinz do not necessarily endorse each and every idea presented, they state that the report's ideas deserve serious and timely consideration. Fifty individuals from academia, industry, the environmental community, and government worked on the project. The final report of Project 88, "Harnessing

Market Forces to Protect Our Environment—Initiatives for the New President," describes innovative measures to address major environmental and natural resource problems. Most enlist marketplace forces and entrepreneurial ingenuity, either to deter pollution or to reduce resource degradation. The report emphasizes practical employment of economic forces to achieve heightened environmental protection at lower overall cost to society. At the same time, however, it recognizes that not all environmental problems are amenable to incentive-based approaches.

There was a time when the only serious consideration given to market-oriented environmental-protection policies was by economists (in academia, government, and the private sector), but a new environmentalism that embraces these approaches is emerging. The Environmental Defense Fund was first among the major, national environmental organizations to advocate incentive-based policies; now there is growing interest in these approaches among other groups as well. As Peter Passell wrote in the *New York Times* last October 19, "the senators' imprimatur confers a new political legitimacy on economists' ways of thinking about environmental problems."

Least-Cost Protection

The notion of a free market in the environment has long been anathema to environmentalists, who correctly view economic activity as the principal source of environmental pollution. But there is an obvious difference between allowing imperfect market forces to continue to degrade the environment and harnessing the awesome power of our decentralized market economy in the cause of least-cost environmental protection.

The approaches embodied in the Project 88 report call for substantial changes in the nature of government regulation, but not for the abandonment of regulation per se. For example, under the tradeable permit

ROBERT N. STAVINS is assistant professor of public policy at the John F. Kennedy School of Government, Harvard University, and an associate of its Energy and Environmental Policy Center. He is staff director of Project 88.

mechanism described below for acid rain control, the federal government would have responsibility for ensuring the liquidity of the secondary market in permits. This contrasts with the government's current role in conventional anti-pollution programs, in which it judges the suitability of specific control technologies for diverse sources of emissions. This represents an important change in the nature of government activity in the environmental area, but is by no means an abrogation of the government's essential role. The Project 88 recommendations build upon the environmental safeguards already in place; the changes envisioned are evolutionary, not revolutionary.

The Project 88 report does not propose a free market in the environment. Instead, it recommends that once tough environmental goals are set, mechanisms that take advantage of marketplace forces should be designed for achieving those goals. Project 88 steps away from ongoing debates over specific environmental goals, to focus instead on finding better mechanisms for achieving whatever standards are set.

Because environmental issues continue to rank high among the priorities of Americans of all political persuasions, the administration has the opportunity to forge a strong bipartisan consensus in favor of sensible environmental protection and wise use of natural resources.

Pricey Status Quo

The nation's environmental and natural resource policies have evolved over two decades in response to an array of perceived threats. As new dangers have arisen, the cost of enforcing even existing policies has escalated. Given the magnitude of current budget deficits, it is less and less likely that we can increase environmental protection simply by spending more on existing programs and policies. Environmental protection must become cost-effective if the country is to build and maintain international competitive strength along with a better environment.

Channeling the forces of the marketplace into environmental programs can create economic incentives (and disincentives) that make the everyday economic decisions of individuals, businesses, and government work effectively for the environment. This does not mean that environmental goals should be set according to exclusively economic criteria. The Project 88 report does not recommend the use of benefit-cost analysis, or setting dollar values on environmental amenities or human health.

Market-based environmental policies can increase environmental protection and economic productivity by providing incentives for business and individuals to go beyond what regulators can require. Developing such proposals in detail and putting them into action will be a complicated and difficult enterprise, but this challenge must be met. Public demand for a high-quality environment is both widespread and strong. Opinion polls consistently indicate that public concern over environmental quality has remained firm during energy crises, economic downturns, and tax revolts.

Neither the federal government nor our economy as a whole will be able to afford higher environmental standards unless we find means that provide the most protec-

tion possible for every dollar. The conventional approaches of setting uniform standards or requiring specific control technologies are unnecessarily expensive.

Internalizing Costs

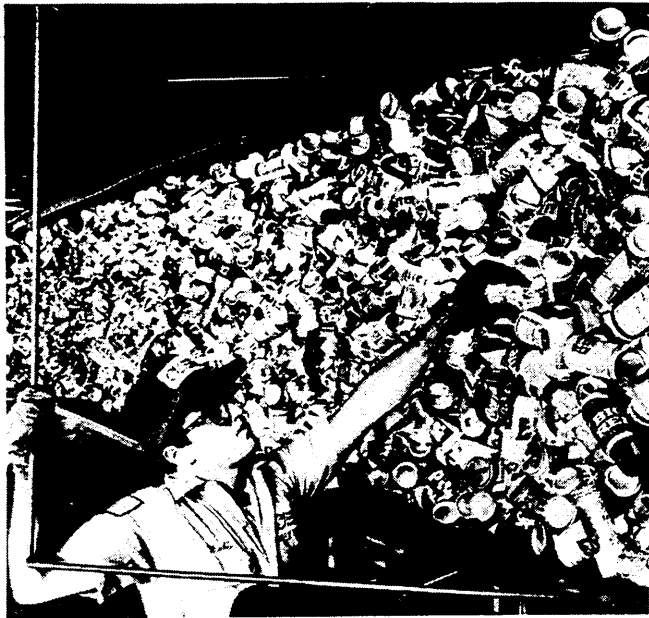
A key to reducing inefficient natural resource use and environmental degradation is to ensure that consumers and producers face the true costs of their decisions—not just their direct costs, but the full social costs of their actions. Some of the economic-incentive systems that do this are: tradeable permits for industrial pollutants; pollution charges; deposit-refund systems for containerized hazardous wastes; least-cost bidding at utilities for greater energy efficiency; removal of market barriers that promote inefficient resource use; and removal of unwarranted subsidies of environmentally destructive activities.

Tradeable permit systems set an allowable overall level of pollution and then allot companies permits "allowing" them to pollute a limited amount. Firms that keep emission levels down may sell their surplus permits to other companies. Charge systems impose a fee or tax on pollu-

Market-based environmental policies can give businesses and individuals an incentive not just to meet regulatory requirements but to go beyond them.

tion. Because they pre-determine a minimum cleanup level, tradeable permit systems are generally preferable to pollution taxes, where it is difficult to estimate the ultimate environmental impact. Market systems do not have to begin or stay at the status quo; they can issue initial permits for some fraction of current emissions and give permit holders a deadline to get there. They can also move toward stricter standards.

At a time of concern about international competitiveness, such incentive-based approaches can provide huge savings and increases in productivity. For example, a market-based approach to acid rain reduction could save companies \$3 billion per year, compared with the cost of a dictated technological solution, according to a study conducted by the Environmental Protection Agency (EPA). Incentive-based policies need not be any more expensive for the government to administer than conventional regulatory methods. In fact, such systems encourage firms to monitor the pollutant-emitting activities of other firms—a manifestation of the discipline of a competitive market. Nevertheless, environmental protection cannot be achieved without significant government expenditures, since no program of controls can be effec-



Reynolds Metal Company

Recyclers should be allowed to bid for waste management contracts.

tive without a commitment to monitoring and enforcement.

Most important, economic-incentive approaches allow greater levels of protection for any given aggregate cost of control. Rather than dictating to enterprises how they should manufacture their products, incentive-based systems impose a cost on pollution-causing activities, leaving it to individual firms to decide among themselves how to achieve the required level of environmental protection. Market forces will drive these decisions toward least-cost solutions and toward the development of new pollution-control technologies and expertise by the private sector.

Incentive-based approaches have an added benefit; they can make the environmental debate more understandable to the general public. Because they do not dictate a particular technology, these approaches can focus attention directly on the selection of environmental goals, rather than on complex questions concerning technological alternatives for reaching those goals.

Reasonable concerns exist, particularly within the environmental community, regarding the design and implementation of economic-incentive programs. The sensible response is neither blind retention of the status quo nor total abandonment of the present system. We need to adapt, not abandon, current programs and build on America's and other industrialized nations' initiatives with market-based policies. Clearly, market-oriented policies will not fit every problem, and the best set of policies will involve a mix of market and conventional regulatory processes.

Sensible Criteria

The policies recommended in the Project 88 report are practical and politically feasible. They deliver improved environmental quality at reasonable cost and are consistent with American traditions favoring voluntarism over government coercion. The full report describes 36 policy recommendations for 13 major environmental and

natural resource problems. A small sample of those recommendations are briefly outlined below.

For each environmental and natural resource problem examined, a variety of possible policy responses were considered. Alternative policies were assessed according to nine major criteria:

- Will the policy effectively achieve environmental goals?
- Will the policy achieve environmental goals at the least cost to society at large?
- Will the policy provide government agencies with needed information?
- How easy (or costly) will monitoring and enforcement be?
- Will the policy be flexible in the face of changes in tastes, technology, or resource use?
- Will the policy give industry positive, dynamic incentives to develop new, environment-saving technologies?
- Will the economic effects of the policy be equitably distributed?
- Will the policy be broadly understandable to the general public?
- Will the policy be feasible, both in terms of legislative enactment and in terms of implementation?

Global Warming

Problem: The Greenhouse Effect and Climate Change. There is a strong possibility that significant global mean temperature increases may occur during the next several decades as the result of the "greenhouse effect," associated with emissions of carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons (CFCs). Global climate changes unprecedented for their speed of occurrence may result, including changes in precipitation patterns, storm intensities, and ocean levels.

Recommendation: Fund research on causes and consequences of global warming and on specific adaptation and prevention strategies. Federal support of basic scientific research is needed in this area. Long-term research goals should include the identification of effective, efficient, and politically viable strategies—whether based upon prevention, adaptation, or some combination of the two.

Recommendation: Prevent deforestation through debt-forest swaps. Common interests among developed and less-developed countries (LDCs) could be furthered by extending the concept of greenhouse gas (GHG) "offsets" into the international arena through "debt-for-forest swaps." Maintaining (rather than burning) tropical forests can constitute a significant source of GHG reductions; and voluntary debt-forest swaps will benefit debt-burdened LDCs.

Smog and Acid Rain

Problem: Local Air Pollution. As a result of 20 years of federal attention to local air pollution problems, there have been substantial improvements in air quality in most parts of the country. Nevertheless, more than 100 million Americans remain exposed to excessive smog (ambient ozone) levels for at least some period each year, and some 70 urban areas lack adequate local plans to reduce levels to meet current standards.

Recommendation: Implement tradeable permits for stationary

Recommendation: Improve use of environmental impact statements. Federal flood-control and drainage projects provide strong financial incentives for private landowners to convert their wetland holdings to dry croplands. These impacts should be candidly assessed through the Environmental Impact Statement process. Impact areas must be correctly defined to include all areas where drainage and clearing are (economically) induced.

Waste Management

Problem: Solid Waste Management. Throughout the country, old landfills are filling up, and it is becoming increasingly difficult to find sites for new landfills. Giant garbage incinerators are bringing with them giant bond issues representing burdensome investments for many communities. Incinerators produce their own set of environmental hazards, including hazardous air emissions and toxic ash.

Recommendation: Implement policies that allow recyclers to compete. The vast majority of our garbage is recyclable. The critical question is whether recycling makes economic sense. Recycling's most important economic benefits typically come from reducing the quantity of garbage that must otherwise be collected and disposed, not from revenue from sales of recycled materials. If communities are to adopt efficient solutions to their solid waste management problems, recycling must be considered along with other alternatives. The bidding process for municipal waste management should be opened to all alternatives, by specifying outputs and results rather than specific techniques. In this way, communities will have incentives to compare the costs of recycling with the avoided costs of conventional surface disposal.

Problem: Presence of Toxic Substances in the Environment. Although federal legislation nominally encourages toxic-waste source reduction, the actual focus of regulation has been on controlling pollution at the "end of the pipe."

Recommendation: Provide incentives for source reduction. To finance the cleanup of hazardous waste sites, the Superfund program imposes a "front-end" tax on the chemical and petroleum industries, unrelated to the toxicity of products or services. This tax provides no incentive for firms to switch to less hazardous substances or to recycle wastes. A "waste-end" tax could induce industries to reduce the toxicity of their products and processes and could also encourage consumers to substitute safer products. But waste-end taxes provide incentives for illegal dumping. In some cases, the answer to this quandary will be a deposit-refund system, discussed below. Another approach to source reduction is labelling requirements, which compel producers to inform consumers about the presence in products of known toxic substances that may present significant risks. This approach must be used carefully, however, because excessive labelling may cause

people to ignore signs or labels that warn of genuine risks.

Problem: Management of Toxic and Infectious Waste. Among the most difficult of hazardous waste problems are those posed by wastes generated in quantities small enough to be stored, shipped, and dumped more or less anywhere in the environment.

Recommendation: Implement a deposit-refund system for containerized wastes. For the management of containerized hazardous waste, a front-end tax that works as a deposit could be linked to a refund payable when quantities of toxic substances are turned in to designated facilities,


A market-based approach to acid rain reduction could save companies \$3 billion per year.

whether for recycling or disposal. This refund provides three important incentives for toxic management: first, an incentive to follow rules for proper disposal and to recapture would-be losses from the production process; second, an incentive for producers to look for non-hazardous substitutes; and third, an elimination from agencies' monitoring problems of the nearly impossible task of preventing illegal dumping of small quantities at dispersed sites in the environment.

Prognosis for the Future

Across the United States, there continues to be a strong consensus in favor of effective environmental protection. In many cases, our environmental goals are clear—the question is how to get there. Private-sector innovation, which market-oriented environmental policies will encourage, is essential if the United States is to maintain both economic growth and environmental quality.

Fortunately, there are some hopeful signs on the horizon. Some progressive segments of private industry and a growing number of environmental organizations have come to recognize that incentive-based approaches should be included in our portfolio of environmental-protection strategies.

If the conservation ethic of Theodore Roosevelt represented the first major era of environmental concern in the United States, then the decade of new laws following Earth Day was surely the second. The challenge now for the administration and the Congress is to move aggressively into a third era—a period when practical and economically sensible policies will provide more effective and efficient environmental protection and natural resource management. 

"Let's Pretend" Markets

Dear Sir:

Robert N. Stavins' article ("Clean Profits: Using Economic Incentives To Protect the Environment," Spring 1989) illustrates how little progress has occurred in the environmental debate. Mr. Stavins' economic rhetoric is refreshing; unfortunately, his message remains the same "only the Feds can save us" reality. Project 88, the report summarized in the article, is a hodge-podge of dated economic gimmicks uneasily linked to the standard environmental ideology. The message is unchanged: markets "fail" to protect environmental values; hence, government must intervene. The "new breeze" is to use pollution taxes, emission fees, and other politically engineered economic carrots and sticks to "perfect" our messy capitalist economy. When these ideas were first discussed in the early 1970s, they seemed plausible. At that time, economic planning was held in high regard, while markets were seen as archaic, incapable of addressing the complexities of a modern economy.

The world has grown wiser. Post-World War II experiences with economic planning here and abroad have shown that while markets aren't perfect, they consistently outperform political bureaucracies. Moreover, public choice researchers such as James Buchanan have demonstrated that the "public interest" model of "good government," by ignoring the role that self-interest plays in the political world, often leads to disastrous results. Mr. Stavins also seems unaware of the environmental benefits that would be made possible by the expansion of private property and the resulting greater reliance on private stewardship arrangements. The "let's pretend" markets that Mr. Stavins promotes would lack such property rights and, as Warren Nutter pointed out long ago, markets without property rights are a "Grand Illusion."

Mr. Stavins is unwilling to challenge the absurdity of current environmental laws, which impose uniform constraints on a pollutant-by-pollutant basis across the nation. He would simply place economic penalties on all economic activities and raise them until pollution goes away. Moreover, Project 88 goes far beyond its purported "efficiency" perspective of merely determining effective means of achieving environmental goals. Disguised in Mr. Stavins' article (explicit in Project 88) is a call for sharply increased corporate average fuel economy (CAFE) standards. Had Mr. Stavins read the paper by his fellow Harvard professor John Graham, "The Effect of Fuel Economy Standards on Automobile Safety" (*The Journal of Law and Economics*), he would have found that higher CAFE standards dramatically increase highway fatalities. That, however, may well not have changed his recommenda-

tions; Mr. Stavins, like his fellow environmental planners, seems to prefer increased regulatory control even when public health suffers.

Diversity of Tastes

Less pollution is a good thing, but in the real world it is far better to have less of some pollutants than others, less in some regions than others. Moreover, there are many different ways of measuring pollution (cumulative, peak, peak cumulated over some specified time period); which statistic is most

relevant may well vary depending upon local conditions. People may differ considerably in their willingness to accept varying air quality. Not every individual purchases bottled water, nor does every individual air condition his home.

The essence of this criticism is that centralized efforts at pollution control cannot take into account the variability in tastes and control possibilities critical to a modern com-

plex economy. All economic activities entail some environmental consequence—efforts to address environmental problems from Washington thus amount to an indirect way of controlling all aspects of our economy. Theory and practice argue that all such efforts are doomed to failure and must give way to an approach based on an expansion of property rights to those environmental resources now at risk. That task is not easy—nor is the task of the reform of the centralized economies of Eastern Europe—but it is essential. As Pogo noted: "We have met the enemy and he is us!" Only extending stewardship responsibilities to individuals via expanded private property can make Pogo's injunction real to the citizenry.

Hayek vs. Hungary

Imagine Mr. Stavins were to publish a similar report aimed at improving the overall economy. He might piously note that it was not the purpose of markets to decide what is to be done. "Need," not individual choice, would determine production levels. His plan would then establish targets for wheat, toilet paper, cars, housing, and so forth, and detail an elaborate set of economic means to ensure this output is "efficiently" produced and distributed. That, after all, is pretty much what the Hungarian central planners have sought to do over the past two decades. They now know what F. A. Hayek and other free-market economists have sought to explain to their planner colleagues—that the problem solved by markets is far less how to produce than what to produce. Trade-offs are the essence of markets and trade-offs require private control over property.

Environmental values are critical. We should not waste time and ener-

gy in a foolish delusion that centralized planning will be any better at producing environmental quality than wheat. Creating property rights and enforcing the Polluter Pays Principle—the critical steps toward integrating environmental values into a free economy—will take much work and much creative thinking. But that effort—not another “good government” diversion—should be the priority of conservatives and all people valuing both economic freedom and environmental quality. The Road to Serfdom leads nowhere, even when green rather than red bricks pave its course.

Fred Lee Smith Jr.

Competitive Enterprise Institute
Washington, DC

Robert Stavins responds:

Fred Smith states that my article illustrates “how little progress has yet occurred in the environmental debate.” On the contrary, current developments in Washington indicate how dramatically the substance and the tone of the debate have changed, even over the past 12 months. For the first time, serious consideration is being given to market-based approaches to environmental protection by the major players in national policy—the administration, the Congress, private industry, and the environmental community.

For nearly 30 years, economists have recommended market-based reforms of environmental policy and for just as long such recommendations have been ignored by policymakers. What has changed? Mr. Smith claims that Project 88, upon which my article was based, contains the same “dated economic gimmicks,” but the truth is that it is Project 88’s *departure* from previous recommendations by economists that helps to explain the very positive reception these ideas are receiving. Whereas economists have traditionally argued for the use of

economic criteria to establish environmental goals and standards, Project 88 advocates a more moderate course—namely, that the environmental goals set by the body politic be achieved by least-cost means.

It is true that Project 88 does *not* recommend market-based solutions for *all* environmental problems, but this is because such approaches are *not always* appropriate. Whereas a properly designed marketable-permit approach to acid rain control

has the potential of being productive and cost-effective, other environmental problems, characterized by localized, threshold effects, are not good candidates for control by such market mechanisms, since a result is likely to be the creation of significant pollution hotspots. Examples of the latter category include the case of highly toxic chemicals being emitted into small streams and emissions of dioxin from solid waste incinerators.

Inexplicably, Mr. Smith states that I am unwilling to challenge “current environmental laws, which impose uniform constraints on a pollutant-by-pollutant basis across the nation.” But such a challenge is repeated throughout my article and the Project 88 report. Mr. Smith says the essence of his criticism is that “centralized efforts at pollution control cannot take into account the variability in tastes and control possibilities critical to a modern complex economy.” But this is precisely why economic-incentive approaches to environmental protection are needed. The 36 recommendations

in the Project 88 report are based upon greater reliance on individual initiative, made possible by policies that make it profitable for individuals and firms to clean up and costly for them to fail to do so. From our recommendation of a system of marketable permits for acid rain control to our recommendation of establishing markets for the allocation of western water supplies, the focus is repeatedly on using the powerful forces of the decentralized market and the ingenuity of individual entrepreneurs to solve environmental problems at lowest possible cost to society at large. Although the particular perspective and attendant rhetoric that Mr. Smith favors may well be absent from Project 88, the underlying approach he calls for actually permeates my article and the full report.

Mr. Smith’s call for exclusive reliance on the expansion of private property rights as a pure and simple solution for environmental problems is based upon ideas first developed by Ronald Coase 30 years ago. Unfortunately, the Coasian solution of bilateral negotiation is as infeasible as it is simple, because of the large numbers of interested parties involved in most environmental disputes and because of the public-good nature of the resources of concern. Does anyone really believe that acid rain can be efficiently controlled by assigning private property rights for the U.S. airshed and then effecting negotiations among all affected parties? Economic-incentive mechanisms, on the other hand, avoid the impracticalities of the

pure, private-property approach, while retaining the merits of decentralized, market-driven policies. There is clearly a place for greater reliance on market forces in our approaches to environmental problems, but an idealized, unreal image of the market only obscures possibilities for real policy improvements to deal with actual environmental problems.