

New Environmentalism

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Executive Summary

This paper presents a commonsense approach to public policy toward the environment. Instead of focusing on what decisions should be made, it focuses on how they should be made and by whom. Specifically, the paper proposes a methodology for making decisions based on a covenant between citizens and their government. The covenant is an agreement about principles that will be used in making public policy decisions and about filters that will be relied on to determine the appropriate context for those decisions.

New Environmentalism

Traditional environmentalism assumes that in important ways people do not matter — our values don't matter; our level of knowledge doesn't matter; the incentives we face don't matter. Thus it assumes environmental problems can be analyzed and solved without reference to individuals and circumstances. In contrast, the new environmentalism recognizes that in order to solve complex problems, we *must* have an understanding of the values, knowledge and incentives of the affected parties.

Values. Traditional environmentalism assumes that environmental goals are sacrosanct, that they are more fundamental than other values. From this it follows that individuals' values are unimportant in formulating social goals. But environmental values are not sacrosanct. They are part of the many values that define the quality of human life. Time and resource constraints require that we make choices among these values.

Knowledge. Traditional environmentalism assumes that planners or other experts possess the knowledge most relevant to environmental problem solving and ignores the value of location-specific knowledge and the practical experience of ordinary citizens. New environmentalism recognizes that most information relevant to understanding and solving environmental problems varies by time, place and circumstance. Because environmental problems are complex and reality is dynamic, most of the relevant information is dispersed and not readily amenable to centralized gathering or use.

Incentives. Traditional environmentalism fails to appreciate the importance of incentives in guiding human action. New environmentalism focuses on decision-making processes and strives to create incentives for people to obtain the information to become good environmental stewards. Because of its respect for incentives, new environmentalism views the marketplace as an important mechanism for problem solving. It recognizes that wealth creation, appropriately harnessed, is an engine of environmental progress.

New Public Policy Paradigm

Most environmental problems arise because property rights and responsibilities are either nonexistent or are not clearly defined, enforceable and transferable. For example, if grazing land is owned in common, each herder has an incentive to overgraze. Their self-interested behavior leads to environmental

degradation. Sometimes such problems can be solved by making rights and responsibilities explicit. If grazing land is converted from common property to private property, the owner has a personal interest in protecting it from degradation.

Private property solutions are not always feasible, however. For example, no one owns an air basin. It has no stewards to object to polluting air emissions. Thus decisions about the “clean air” level for an air basin are necessarily collective. But the political process is itself a commons in which people seldom bear the full costs of their bad decisions or reap the full benefits of their good decisions. Distorted political incentives often produce results harmful to both the environment and the economy.

The private property solution to the problem of overgrazing allows owners to erect fences and boundaries and declare certain actions off limits to others. Is there a way to constrain collective decision-making so as to avoid the worst consequences of the perverse incentives inherent in collective choice? We believe there is.

An Environmental Covenant

To channel collective decisions in a positive direction, we propose a covenant between the citizens and our government. Such a covenant would channel collective decision making to promote environmental goals as well as other goals and ensure that decisions are fair and reasonable. The covenant would have two components: (1) a set of *principles* to determine how decisions should be made and (2) a set of *filters* to determine the context in which they should be made.

Principles. These principles reflect widely held, generally accepted value judgments. The following are some examples:

Individualism Principle: Other things being equal, when individuals make their own decisions about what values to pursue, conflict is reduced and the well-being of society is enhanced.

Decentralization Principle: Where decisions must be made collectively, the best place to make them is closest to where the problem occurs.

Do No Harm Principle: Action should be taken only when it is clear that more good than harm is likely to result.

Balancing Principle: The benefits of a chosen policy should exceed its costs.

Efficiency Principle: Other things being equal, we should attempt to reach social goals in the least costly way.

Flexibility Principle: Individuals and firms should be free to meet regulatory requirements in the least costly way and to implement new ideas.

Compensation Principle: Those asked to provide public amenities should be compensated because it is inappropriate to impose the costs of a public good or service on a single person or firm.

Filters. Decision-making filters help identify the appropriate context for environmental decisions. For example, the federal government should not make cost-benefit decisions when local individuals or businesses hold all of the relevant information. Conversely, individuals or local businesses should not make decisions on issues with national or global costs and benefits. The following are some examples of the use of filters:

Consensus filters partition problems based on whether a consensus exists. Lack of a national consensus creates a presumption in favor of applying the decentralization principle and making decisions locally.

Divisibility filters partition problems based on the degree of divisibility. If problems are entirely local and no national consensus exists on a solution, the decentralization principle points to the desirability of local decisions.

Knowledge filters group problems based on our level of knowledge of cause and effect. If we know little about the causes, scope or effects of a problem, the do no harm principle suggests that we should be cautious about adopting solutions.

Risk filters group problems based on the degree of risk they pose. If the risk to health or safety is high, then the flexibility and balancing principles indicate a strong case for strict regulation. If the risk is low, the flexibility and balancing principles suggest that government's role should be limited to setting standards that firms can meet in the least costly ways.

Strategy filters partition problems based on the potential for different types of solutions. For example, we might reduce a pollutant through regulation, use of the tort system, imposition of taxes or fines or the creation of tradable property rights. Once we have identified the potential strategies, we could employ the balancing and flexibility principles to choose among them.

Ownership filters partition problems based on the degree to which property rights are defined and protected. If resources are owned, using the individualism and compensation principles can improve social well-being by clarifying and enforcing responsibilities for environmental wrongs and by rewarding individuals who enhance environmental quality. Where resources are unowned or property rights are not well-defined, other filters and principles are applicable.

Information flow filters separate problems based on the potential for enhancing the availability of information. Many problems can be solved by helping individuals obtain the information they need to make wise decisions. Once we identify who has the information and who needs it, we can apply the appropriate principle to help. When better information flow will not promote better decisions, we must rely on other filters.

The filters help us establish decision-making hierarchies. For example, we would choose decentralized decision making only after we determined that there is no national consensus and that the problem is divisible. We also would want to consult the divisibility filter before we apply the balancing principle. A true balancing of costs and benefits can take place only at the level of decision making where all the relevant factors are considered.

Environmental Benefits

Respecting the environmental covenant should lead to more pollution prevention, more efficient and effective pollution control and quicker pollution cleanup. For example, vehicle smog check programs impose costs and inconveniences on all motorists, yet do little to improve air quality. We could have much cleaner urban air for little extra cost if we took direct action against the 10 percent of cars that cause 50 percent or more of the pollution. The strategy filter would obligate government to consider alternatives to current Environmental Protection Agency guidelines. The efficiency principle would encourage government to choose less costly alternatives. The divisibility and decentralization principles might authorize states or localities to establish their own clean air policies in situations where pollution impacts are strictly local.

Respecting the covenant would correct the government's tendency to cause environmental problems as a side effect of such policies as farm subsidies that encourage overuse of pesticides; below-cost timber sales that encourage over-logging; flood insurance that encourages development in ecologically sensitive areas; and dam and highway construction projects that cause environmental harm. The balancing principle would require government to consider the benefits of environmental quality and the costs of environmental destruction in making policy decisions.

Adherence to the covenant also should create opportunities for landowners to benefit from the wildlife on their land. The strategies and information flow filters would direct government to consider alternatives to the command-and-control approach of the Endangered Species Act. Applying the efficiency and flexibility principles we might discover that we could accomplish more, for the same social cost, if we paid compensation or created a system of rewards to landowners who improve habitat and attract wildlife to their property.

A Model for the Future

New environmentalism starts with the premise that, where possible, we need to let individuals decide how to balance their time and other resources in accordance with their values. Devolving decisions to smaller units of governance is one way to accomplish this end. Creating clearly defined property rights and responsibilities is another. These rights and accompanying responsibilities link people's choices with the costs of making those choices, reinforcing incentives for stewardship.

Introduction: The Need for Change

Environmentalism is at a crossroads. Thirty years of public policy have produced some spectacular successes. For example:

- Airborne lead emissions declined by almost 90 percent during the 1980s.¹
- In Los Angeles, the nation's "dirtiest" air basin, stage one smog alerts declined from more than 120 in 1977 to 13 in 1995.²
- Phosphorus levels, a major indicator of water pollution, were 40 to 70 percent lower in the Great Lakes in the early 1990s than in the 1970s.³

But environmental policies also have sparked conflict, and they carry a steep and rising price tag. Since the early 1980s, the U.S. has poured more than \$22 billion into Superfund site cleanup, yet cleanup at only one-fourth of the high-priority hazardous waste sites has been completed.⁴ Harvard economists Peter Wilcoxon and Dale Jorgenson estimate that environmental expenditures reduced the long-run gross national product by 2.59 percent during a 10-year period — an amount equal to about \$1,600 per year for every U.S. household.⁵

"Environmental expenditures reduce gross national product by \$1,600 per year for every U.S. household."

Sometimes important problems remain unaddressed while trivial problems receive major policy focus. Consider the following evidence:

- Scholars at the Harvard Risk Assessment project have estimated that we could save 60,000 additional lives every year by taking money away from the regulation of trivial health risks and applying it to more substantial health problems.⁶
- An internal survey of the U.S. Environmental Protection Agency's employees concluded that the agency spends money on programs that are politically popular and devotes much less effort to those that might effect real, significant environmental improvements.⁷
- Numerous studies have shown that government programs sometimes pursue environmental goals inefficiently, wasting money that could be spent to achieve other environmental and nonenvironmental goals.⁸

These problems point to a need for reform. But reform does not mean abandonment of environmental goals.⁹ Reform means a change for the better. We must find ways to incorporate environmental values more efficiently, fairly and effectively into the decisions of individuals, firms, associations and governments.

This study argues that real reform cannot occur until it is coupled with and driven by a new vision of environmental progress.

Searching for a New Vision: New Environmentalism

The 104th Congress trumpeted an environmental reform agenda in 1995. Touting risk assessment and cost-benefit analysis, reformers set out to change the rules of the environmental policy game. They failed. They failed in part because they focused on what decisions should be made, stressing the costs and inefficiencies of past policies rather than the gains that could be made by carefully restructuring the environmental decision-making process.

Using the language of calculation — dollars and cents, efficiency and compensation — the reformers did not appeal to the American public. The language may even have frightened some into viewing reform as abandonment of basic environmental protections.

Too much of the reformers' message was negative. The focus of reform was on revoking, limiting, constraining. Reformers correctly pointed to the excesses that had crept into environmental policy during 30 years of domination by rule-bound bureaucracies. But they did not provide an alternative way of protecting the environment. They did not even clarify the basic questions: What is environmental protection and does environmental protection matter?

Discussions of risks and costs do not adequately answer such questions. The architects of reform need to explain why we care about environmental protection.

Caring for the Earth. Reminders are everywhere. Redwood forests, the starkness of a Utah butte, the elegance of a moose and the marvel of an orchard spider's web in a garden — wonders like these stir the soul and prompt yearnings for environmental protection.

There are the dark reminders, too. A brown haze begooms the Los Angeles horizon. A clutter of debris heaps up like mutant snow, knee-deep along the highway from La Guardia Airport to Manhattan. Oil-slicked water fouls once-pristine Gulf Coast beaches.

Aesthetic appreciation of nature is only one part of the environmental picture. Attaining a good quality of life involves not only protecting nature's gifts but also protecting against health-endangering pollutants and raising individual incomes and standards of living. More and more Americans are concerned about each of these problems. Fortunately, the solutions are not mutually exclusive. Evidence suggests that wealthier societies have generally higher living standards, lower pollution levels, longer life spans and higher quality environmental amenities.

Ideas Have Consequences. Our environmental rule-making framework is ailing. As previously noted, 30 years of environmental policy making in the United States have both achieved results and engendered conflict. The

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emphasis on top-down, one-size-fits-all rule making is ill suited to solving complex, often location-specific problems. Here, as elsewhere, ideas have consequences. How we think about environmental problems shapes our decisions on how to address them.

The Old Vision. Traditional environmentalism has cast business owners against environmentalists, the private sector against the public sector, “naturists”¹⁰ against scientists, regulators against the regulated and some industries against others. It has led us to target marginal problems with little regard to mitigation costs. It has fostered the crude tools of command and control that cannot take into account intricate environmental relationships. This traditional vision combines three basic assumptions about environmental goals and how to achieve them.

First, traditional environmentalism tends to set environmental values apart from other values and to treat them as sacrosanct or absolute. Under this view, the very idea of balancing environmental values with other values is suspect. For example, one traditionalist goal is to eliminate all emissions and achieve a pristine state of nature; some environmental groups have proposed total elimination of chlorine emissions.

Second, traditional environmentalism assumes that the knowledge of planners or other experts is most relevant to environmental problem solving and ignores the importance of experience and the variability of time, place and circumstance. People who adhere to this vision tend to view environmental problems as static, exhibiting simple, linear, cause-and-effect relationships. They also often view environmental problems as separable, disconnected in cause, effect and solution.¹¹

In this view, one-size-fits-all regulations seem appropriate and desirable. And progress is often defined as a series of prescribed results achievable by mandates: reaching “ideal” population levels, using “preferred” technologies, creating planned communities and consuming only specified amounts of resources.

Third, traditional environmentalism fails to appreciate the power of incentives to change behavior. In general, adherents of this vision are suspicious of the market’s ability to solve environmental problems. Clearly defined, secure and transferable property rights, the foundations of the market, also come under suspicion. Moreover, since the market is the mechanism that advances economic growth and prosperity, the old vision often has linked it to environmental degradation.¹²

For many people, the old vision is still compelling. They are attracted by its apparent moral purity and seemingly plausible view of man’s interaction with nature. But there is a better vision — one that underscores the importance of personal accountability, flexibility, diversity and decentralization.

“Top-down, one-size-fits-all rule making is ill-suited to solving complex problems.”

“The new vision underscores the importance of flexibility, diversity, decentralization and personal accountability.”

A New Vision. I call the alternative vision new environmentalism. It differs from the old model in three fundamental ways.

First, new environmentalism views environmental values as part of a diverse cluster of human values, the pursuit of which establishes the quality of life. The desire to protect the planet from degradation, to preserve nature’s beauty and to mitigate harmful emissions are values most of us share. But because our resources are constrained, we must make choices. We must balance each value against all others as we make individual and collective decisions.¹³

Second, new environmentalism views the world as complicated and interconnected, involving dynamic changes and interactions. To understand the results of environmental policy, one must understand the complexity of both natural systems and the incentives that motivate human action. For this reason, the new vision recognizes that the knowledge most often relevant to understanding and solving environmental problems is specific to time, place and circumstance.¹⁴

Finally, new environmentalism views economic incentives as critical determinants of behavior. For this reason, the new vision views markets and the property rights on which they depend as tools for environmental problem solving. They are necessary means to reaching the common end of maintaining a sustainable, livable environment. Wealth creation, appropriately harnessed, is an engine of progress — including environmental progress. In this view, progress consists of increasing people’s knowledge and understanding of environmental issues and the trade-offs involved in achieving desirable results. It recognizes the need for ongoing adjustment and readjustment as human needs and values evolve, as old problems wane and new ones arise.

Solving Problems. New environmentalism focuses on decision-making processes. It focuses on finding ways to obtain and use good information and on providing incentives for environmental stewardship. It focuses on ways of ensuring that individuals and organizations are able to express the environmental values they hold. New environmentalism proposes the creation of decision processes and institutions that:

- provide incentives for personal responsibility, stewardship and pollution abatement;
- help individuals cooperate to achieve their environmental goals;
- improve access by individuals, firms and other organizations to environmental knowledge;
- foster a balancing of environmental values with other human values; and
- create conditions in which environmental innovation and creativity can flourish.

We call our approach new environmentalism because its focus is on how environmentalism fits into the whole complement of activities that affect the quality of life. This environmental vision emphasizes how environmental values are integrated with other values. It considers how environmental progress integrates with economic activities. It links scientific and economic information with pursuit of human values. It examines the relationships of human motivations with decision-making institutions. Finally, it stresses the complexity of the physical world: how different events are interrelated and how one action often creates, in a domino effect, a series of other reactions and consequences.

Theoretical Foundations of New Environmentalism. The approach advanced here is based in part on the ideas of Friedrich A. Hayek, the Nobel Prize-winning scholar best known for his work on the problems of coordinating complex information in economic decisions.¹⁵ The Hayekian approach differs from that of traditional environmentalists. The latter have focused too much on prescribing outcomes and how to achieve them and too little on how to understand the complex systems in which millions of people pursue their diverse and conflicting interests. The Hayekian approach also differs from that of the neoclassical economists who tend to focus on economic efficiency rather than on how different decision processes accommodate diverse values and how institutions affect incentives and the uses of information.

New environmentalism differs from traditional environmentalism with respect to three fundamental issues: values, knowledge and incentives. Let's look at each in turn.

Creating a New Paradigm: The Role of Values

What are we trying to achieve through environmental policy? Articulations of environmental goals take many forms, from the metaphysical to the utilitarian. New environmentalism attempts to express environmental values within the context of other human values. How can this be done?

Widely Shared Values. Environmental values are increasingly important to Americans and, at the abstract level, most are widely shared. For example, almost all of us would agree that:

- Clean air is better than dirty air.
- Pure water is better than polluted water.
- An unspoiled beach is more attractive than one littered with trash.

Arriving at consensus in an abstract sense on these and other environmental issues is possible. In *A Theory of Human Motivation*, psychologist Abraham Maslow described a hierarchy of human values. Basic needs come

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first — for example, a hungry person seeks food above all else. But when those needs are met, we desire other things, including the self-esteem and sense of fulfillment Maslow called self-actualization.¹⁶ Then there are still other desires — what public opinion expert Robert Worcester describes as the search for relations and meanings.¹⁷

Maslow’s and Worcester’s discussions of values help to explain why community consensus forms more readily around high-risk, health-related pollution problems than around amenity values like preserving old-growth redwoods. For many people, health-related values like those posed by some pollution problems are “basic” survival values, while amenity values are spiritual or aesthetic and perhaps less basic. These spiritual and aesthetic values take a variety of forms, and people rank them quite differently. For some, funding art projects may be especially important. For others, promoting music may be important. For still others, protecting wildlife may be most important.

The problem we face as a society is how to come to grips with all these diverse values. Americans are committed to environmental protection. It is now part of our national psyche. But we are not all equally committed to specific actions. Nor do we agree on a ranking by importance of the actions that turn environmental values into results. As the Deputy Minister of Industry for Canada, our northern neighbor, put it:

At a deep level, the questions [of environmental policy reform] are not just scientific but are strongly about values. [They are about] how these are formed, how societies find rough consensus around important values, and how these get translated into action.¹⁸

The Need for Balancing. Environmental values are not the only values that matter. Humans seek health, safety, nourishment, comfort, fairness and justice, liberty, aesthetics, occupation, learning, companionship and other goals as well.

Attaining nonenvironmental goals often has environmental costs. One reason why is that all production and consumption activities produce residuals. There is no such thing as zero emissions. An electric vehicle may have zero emissions at the tailpipe, but electricity generation at the power plant yields emissions. Solar cells have zero emissions at their point of usage, but their production generates emissions, and battery components generate emissions when recycled or discarded. Producing food changes landscapes; building homes uses resources; traveling to visit a friend consumes energy.

The attainment of one environmental goal often has other environmental or health costs. Take disposable fast food packaging. In the early 1980s, such packaging was disparaged as wasteful, since reusable food service ware

“Environmental values are not the only values that matter.”

was available. But reusables can expose users to higher bacterial contamination and thus to a greater variety of diseases. So while disposables may generate more solid waste per serving, but reusables may pose greater health hazards.¹⁹

Or take chlorofluorocarbons (CFCs). CFCs have been accused of creating a “hole” in the stratospheric ozone layer. The Montreal Protocol, an agreement among nations, resulted in the phasing out of CFCs for many uses. Yet some CFC substitutes, especially those used as refrigerants, are acutely toxic and highly flammable.²⁰

To reiterate: most people simultaneously value many things. But the ubiquity of constraints and trade-offs means that we must make individual and collective choices.

Integrating Environmental Values with Other Values. As noted above, the goal of environmental policy is to express environmental values within a larger set of values. But what does this mean in terms of resource allocation? Economists suggest that:

- Resources should be used for purposes that people value most.
- Goods and services should be produced at minimum cost.
- Whatever is produced should be more valuable than the sacrifice (cost) required to produce it.

Each of these rules presents the same simple idea: *avoid waste and maximize value*. What is true of the economy in general is true with respect to environmental issues. Given limited time, energy and money, it makes sense to direct our efforts where they will do the most good.

On the surface, human values are quite diverse. Yet the underlying thought processes required to pursue them are similar.²¹ If we are to integrate our environmental values, we must balance them against other, sometimes competing values — including other environmental values. This usually is not an all-or-nothing proposition. Seldom is the relevant question whether to ignore environmental values while pursuing, say, greater economic growth or more medical care. Instead, the decisions we face generally are incremental: for example, how much more effort do we want to invest in preserving additional wetlands vs. reducing pests through agricultural research?

Principles of Successful Integration. When environmental values are successfully integrated with all other values, certain principles guide our actions. Specifically, any improvement in environmental quality should be worth more than the cost of obtaining it, in terms of other values forgone. Conversely, any increase in other goods and services at the expense of the environment is justified only if the goods and services are more valuable to us than the environmental quality forgone.

“We must balance environmental values against other values.”

These principles hold true both for individuals and for society. However, they are easier to apply to individual decision making. Even though most people share many environmental values in the abstract, individuals always differ in how they balance competing goals. For example, a person who values old-growth forests above access to cheap lumber products might join with like-minded people to acquire and preserve forestland. Or a community might contract with private landowners to protect more habitat through ecomanagement. The individuals and the community gain new amenities in the form of denser and possibly older-growth forests and richer wildlife habitats. The landowners gain by selling an amenity — improved habitat — to the community.²²

Sometimes, however, private or personal solutions are difficult because one person's choices affect the environmental quality enjoyed by others. In these circumstances, collective action may be required.

Role of the Individual. All values are individual and so are all actions, though individuals daily join together to solve problems. Yet with respect to many environmental issues, the role of the individual is very different than it is in most other aspects of life. This is because individuals sometimes cannot make separate personal trade-offs between environmental goods and other goods. Instead, they must accept the results of collective action. And even in voluntary associations and markets, some degree of accommodation often is required.²³

Consider the example of air quality in an air basin. We cannot all simultaneously have the degree of "cleanliness" we prefer. And since no one owns the air basin, who decides how clean is clean enough? The collective nature of the decision about clean air — as well as clean water and other common resources — often leads to conflict. How can this conflict be resolved? Sometimes collective environmental decisions can be turned into private ones, avoiding conflict and accommodating diversity.

For example, it is often possible for individuals to simply make their own choices. Remember the brouhaha surrounding disposable vs. reusable cloth diapers? Some people anointed reusables as the environmentally sound option and viewed the disposable diaper as a quintessential emblem of waste. Defenders of disposables pointed out that the manufacture and cleaning of cloth diapers creates other environmental problems. But setting aside real ambiguities about the comparable environmental impacts of different diapers, the debate was a contest over different value hierarchies.

Champions of reusables may prefer to minimize trash. Champions of disposables may value more highly the time saved by using disposables or the lower incidence of diaper rash. From this simple example, it is clear that shoehorning everyone into a single choice would diminish the quality of life for all.²⁴

"All values are individual values."

The importance of having choices applies to environmental health risks as well. Some people are more risk averse than others. Some are highly averse to certain potential risks but accepting of others. "Acceptable risk" is a concept whose meaning depends on individual perceptions and values and may also be a function of time, place and circumstance. No amount of scientific inquiry can determine the "right amount" of tolerable risk. Science can help us understand the complex interrelationships among natural resources, chemical elements, human action and ecology. But science cannot decide what individuals value.

Creating a New Paradigm: The Role of Knowledge

There are two fundamental kinds of knowledge: general knowledge and specific knowledge of time, place, circumstance and experience.

General knowledge is constant across time and space, "knowable" in the form of general rules. For example, the boiling point of water is a kind of general knowledge. The boiling point does not change over time, and with some adjustments for altitude it does not change across locations. Among the problems that can be analyzed with general knowledge are those of global warming and ozone depletion. Whatever is known about these problems is available to scientists everywhere, although the information may be incomplete or ambiguous.

Specific knowledge, by contrast, varies by location and circumstance and may change over time. For example, whether incorporating recycled content into a package will save total resources (time, energy, raw materials) will depend on the material, the availability of alternative materials, production details and other specifics. Specific knowledge also embraces such matters as the subjective valuations of individuals. The answer to the question "what do people want?" is known only by the dispersed individuals in society.

Often, knowledge relevant to environmental decision making is specific. Why is this so, and how does this affect decision making?

Most environmental impacts occur locally. Impacts vary depending on local geology, hydrology, biology and meteorology. While universal knowledge in the form of scientific theorems provides some uniform understanding of the physical world, specific knowledge of each location is what enables understanding of actual environmental harms and potential remedies.

Most environmental problems also have a dynamic dimension. Impacts change over time, depending on many interdependent, location-specific variables. For example, all resource uses involve dispersed, dynamic and

"The knowledge relevant to environmental decisions usually varies by time, place and circumstances."

“Property rights link individual choices with the consequences of those choices.”

interdependent supplies of materials. All production processes involve plant-specific trade-offs, and good decision making about them requires experiential knowledge of the plant site, how it functions and how its operations interact with the local environment.

Take paper manufacturing, for example. The feedstock for making paper can come from tree farms, from the residue of lumber production, from public forests or from wastepaper. It can come from foreign or domestic supplies. Availability and cost depend on technologies — how easy or difficult it is to grow and harvest different trees and how easy it is to collect and process discarded wastepaper — as well as on transportation, global economic conditions, the vagaries of climate, discoveries of substitute materials and other variables.

And each manufacturing plant faces different circumstances. Some plants use mechanical pulp processing technologies; some use chemical processing. A plant that uses high levels of wastepaper may consume less total energy than a plant using virgin materials, but it will have to purchase that energy rather than using wood residues as fuel. And the wastepaper plant may generate more sludge waste. What makes sense depends on such details — details that are not uniform and cannot be known by a single decision maker or even a group in a government agency.

If most relevant environmental decisions involve quite specific knowledge, then universal rules invariably will overlook critical trade-offs and details. In addition, if most relevant knowledge is dynamic rather than static, then political and bureaucratic rule-making processes will be unable to adequately respond.

Creating a New Paradigm: The Role of Incentives

What induces people to become good stewards of the environment and to take responsibility for resources under their control? One inducement is the institution of property rights. Another is the marketplace.

Property Rights. Commonly owned resources may sometimes be turned into privately owned resources. Consider Hawk Mountain in Pennsylvania. Some 60 years ago, Mrs. Rosalie Edge was concerned about the shooting of hawks at this mountain flyover, where thousands of the birds passed each year. No government agency shared her goal of preserving the hawks, and many states paid bounties to encourage the killing of such birds of prey. Moreover, no national conservation organization shared her goal. So Rosalie Edge and a few like-minded people bought the mountain and established a preserve.²⁵

Property rights create conditions of stewardship, linking individual choices with the consequences of those choices. If as a farmer I allow my soil to erode, my prospects for a bountiful harvest diminish. If as a forester I chop down all my trees today, I have none tomorrow to sustain my livelihood. But property rights do more than create incentives for stewardship. They also create spheres of autonomy. They allow individuals such as Rosalie Edge and her friends to pursue their values, even when the rest of society does not share those values.

The Marketplace. Market prices are signals for conservation. They are continuous loops of information that give resource users an incentive to do more with less. The higher the price, the greater the incentive. Producers of goods in competitive markets have been responding to price signals for centuries. Their efforts come in big and small steps. For example:²⁶

- Steel high-rise buildings today require 30,000 tons of steel, whereas several decades ago they required 100,000 tons.
- Soda can manufacturers today use 33 pounds of metal to make 1,000 cans instead of the 164 pounds required in the 1960s.²⁷

Sometimes using less means using something different. Replacing copper cables with fiber-optic cables has effected monumental savings of materials. It takes around 60 pounds of sand to produce a fiber-optic cable that can carry 1,000 times more information than a cable made from 2,000 pounds of copper.

These are little-known environmental success stories. They represent what the Office of Technology Assessment has dubbed “environmental triumph.” Many such triumphs occur in small, incremental, almost invisible steps. The potential for material-use reduction is both unpredictable and location-specific. It depends on what Hayek called the dispersed and fragmented knowledge of experience. It also depends on a decision-making setting that enhances entrepreneurship, competition and innovation.

Tragedy of the Commons. Not every problem can be solved through private property rights and markets. Indeed, most environmental problems emerge from circumstances in which property rights and responsibilities are either nonexistent or are not well defined, enforceable and transferable. One economic analysis of the “environmental commons,” made famous by Garrett Hardin, concerns herders who share common grazing land. Herders who overgraze commonly owned land get the immediate personal benefits of overgrazing. Yet the land degradation that results is a cost that will be shared by all herders, not just those who cause it. Thus herders who overgraze get the full benefits but bear only part of the costs of their actions. Conversely, herders who show restraint in order to protect the land bear the immediate cost

“Most environmental problems emerge from circumstances in which property rights and responsibilities are nonexistent or not well defined.”

of their forbearance. Yet the benefits of their good behavior (long-term preservation) are shared by all herders, not just those who cause the preservation. Everyone, therefore, faces perverse incentives to overgraze. To the degree that they act on those incentives, environmental destruction results.

In this analysis, because the land has no owner, it has no protector or defender. As a result, self-interested behavior often leads to environmental degradation.²⁸

The characteristics of this problem have wide application. Most of us would not consider dumping trash in our neighbor's backyard. But since air and water are commons to which we have free access, many of us use them as dumping grounds for all manner of waste. Air, water, public lands and most species of mammals and fish have no clearly defined owners and therefore no protectors or defenders.²⁹ When people use these resources, they derive private benefits, but the costs of use are often borne collectively.

Sometimes environmental problems can be solved by making rights and responsibilities explicit. For example, if grazing land is converted from common property to private property, the owners have a personal interest in preserving it from degradation. This interest motivates them to balance current land use against long-term preservation. Often, however, private solutions are not feasible. For example, no one owns an air basin. It has no stewards to object to polluting air emissions. Thus decisions about the "clean air" level for an air basin are necessarily collective. These decisions, as well as decisions about clean water and other commonly held resources, often result in conflict.

The Political Commons. What can be done about the tragedy of the environmental commons? One option is government regulation. Yet the record of government intervention is spotty. Studies reveal that many government agencies charged with protecting the environment do an inadequate job.³⁰ These include the U.S. Park Service, the U.S. Forest Service, the Bureau of Land Management, the Army Corps of Engineers, the Atomic Energy Commission and its successor, the Department of Energy, the Federal Highway Administration and the World Bank.³¹

One reason why government solutions fail is that the political process is itself a commons.³² People who support policies that impose costs on the entire community bear only a small part of the cost of the policies. Yet they may derive personal benefits. Conversely, public-spirited people who oppose unwise legislation bear the full costs of their opposition. But if they are successful, the benefits of their efforts are mainly enjoyed by others.

Each of us tends to act on the basis of personal rather than societal benefits and costs. As a result, political decision making all too often results in environmental harm. In general, the political process generates three types of distorted incentives.

"One reason government solutions fail is that the political process is itself a commons."

First, legislators have an incentive to pass laws proclaiming lofty environmental goals that seem to reflect the public's abstract values but that avoid addressing the requisite trade-offs. This is because making these trade-offs inevitably produces criticisms that the policies are either too lenient or too strict. Thus legislators delegate to agencies the task of translating the vague language of law into specific regulations. For instance, in the Endangered Species Act of 1972 Congress directed the U.S. Fish and Wildlife Services to strictly regulate the killing or harming of endangered and threatened species. However, the U.S. Fish and Wildlife Services was given discretion over how to determine when a species is to be considered endangered and what was meant by harm. Congress drew praise for writing such a strong act, while the U.S. Fish and Wildlife Services was left to fend off criticism and lawsuits concerning its determinations of what counts as endangered and what counts as harm.

Agencies also face a political commons problem. There is often only a weak link between the effectiveness of decisions that regulators make and their own well-being and career success. This means they have little incentive to develop effective and efficient regulations. For example, because part of the revenues from logging on national forests flow directly into the U.S. Forest Service (USFS) budget, the forest service promotes logging on national forests. It routinely allows logging in areas where the management costs exceed the timber revenues. The budgetary shortfall for below-cost logging is borne not by the USFS but by the general treasury and ultimately the taxpayers, yet part of the revenues flow directly USFS coffers. Worse, environmental damage is often associated with below-cost logging operations on steep slopes. This damage is not accounted for by the USFS, but the public suffers from damaged waterways, decreased wildlife populations and increased landslides.

Finally, lobbyists have an incentive to push for laws that benefit the special interests they represent, even if these laws impose large costs on the rest of society. For instance, when environmentalists push for "no disturbance" of sagebrush habitat in Southern California, they realize the full benefits of their lobbying efforts, while imposing costs of increased fire danger and higher housing costs on everyone living in the area. And, for example, when organic cotton growers lobby for mandates against the use of pesticides and gain market share for organic cotton, they impose higher costs for clothing on everyone else.

Incentives of all three groups that play a role in the political process combine to create a kind of political commons in which accountability for poor decisions is weak and personal rewards for good decisions are limited. Because people face perverse incentives in the political commons for much the same reason they face perverse incentives in the environmental commons, the law is degraded for the same reasons as commonly owned grazing land.

"The political process generates distorted incentives that all too often result in environmental harm."

How Should Collective Decisions Be Made?

Environmentalists face a dilemma: when property rights are not well defined, private voluntary action can lead to environmental degradation. And even when property rights are well defined, managing property to maximize the return on investment sometimes produces environmental impacts on neighboring ecosystems. Yet transferring decision-making power to government creates new problems because the political system is a commons. And governments typically produce one-size-fits-all policies, even though environmental problems vary by circumstance and location.

An Environmental Covenant

To solve this dilemma and improve collective decision making, we propose a *covenant* between citizens and government. Such a covenant would help to “fence in” collective decision making, to ensure that decisions promote environmental goals as well as other goals and that such decisions are fair and reasonable.

A covenant between the public and private sectors could function in the political commons as property rights do in the environmental commons. It would clarify rights and responsibilities, shaping the incentives of decision makers. The environmental covenant we propose comprises both a set of principles to determine how decisions are to be made and a set of filters to determine the context in which they should be made.

Adherence to the covenant would ensure that those most affected by a particular environmental problem make the relevant decisions. The covenant would erect barriers against those who seek private benefits at others’ expense. It would reduce conflict, enhance innovation and broaden the expression of individual and local values.

Principles for Collective Decision Making

In the marketplace, property rights and market prices create constraints on the choices people make. They link decisions about resource use to the consequences of those decisions. Poor decisions reduce property values and lower returns on investment. Good decisions improve the long-term value of assets and increase returns on investment. The principles offered here create a similar though less self-sustaining set of constraints on decision makers. Because they reflect widely held environmental value, the constraints reduce conflict and produce desirable benefits at affordable prices.

Individualism Principle: Other things being equal, when individuals make their own decisions about what values to pursue, conflict is reduced and the well-being of society is enhanced. Before thrusting a

“An environmental covenant would clarify rights and responsibilities.”

problem or environmental issue into an arena of collective decision making, we must first ask whether the problem can be resolved spontaneously by individuals or through market arrangements. Do we need, for example, a single rule demanding that people eat butter, not margarine? Do we need a single rule dictating that all packaging be recyclable? Or reusable? Or made of glass? Is a universal rule likely to lead to the best results?

Smoking no doubt has some impact beyond the sphere of the individual smoker. However, this impact is typically confined to a relatively narrow domain. Moreover, much smoking takes place indoors, in which case the impact is restricted to those sharing that indoor space. Thus, smoking is a divisible problem. One indoor space can accommodate smokers while another accommodates nonsmokers, and market arrangements can satisfy this demand for diversity.

The individualism principle promotes personal empowerment over the status quo. It enhances prospects that even radical environmental values can be pursued rather than tempered or undermined as they often are in collective decision processes.

Decentralization Principle: When decisions must be collective, the best place to make them is at the lowest possible level of government.

When collective rule making is necessary, we should ask whether the problem is local, regional, national or international.

In contrast to tobacco smoke, consider ground-level smog generated largely through vehicle emissions. Smog often disperses widely over an air basin. It is not possible for me to have one level of smog while my neighbor has another. And traditional tort remedies probably are not adequate to address this problem, since it is difficult to identify the polluter. Indeed, the polluter is often “everyone,” since people drive cars and cars now account for as much as half of remaining air emissions. Hence, some form of collective decision may be required. But must the rule that emerges become national? Or is it feasible for different locales, in different air basins, to establish their own rules?

The principle of decentralization requires that the decision be made by those directly affected by it. For example, hazardous waste sites demonstrate the importance of decentralization. So-called brownfields are sites identified as having some toxic contamination; many are abandoned factory locations. Under current federal law a number of these sites are in limbo, no longer used for their former purposes but unavailable for new uses. They are local blights.

Often, local communities would like to see these sites redeveloped. Many of them have low levels of contamination or problems that could be remedied quickly and cheaply. But current federal cleanup standards deter redevelopment because they don’t take into account realistic potential uses of

“The individualism principle promotes personal empowerment.”

these sites. Bringing cleanup decisions back home allows local people to consider local conditions, evaluate the potential harms and benefits from redevelopment and devise their own cleanup plans.

Decentralization improves environmental policy in at least two ways. First, those closest to the problem have the most relevant information about it. Second, the harms it causes, the benefits resulting from the remedies and the trade-offs or costs associated with different remedies are felt by people at the point of impact. Bureaucrats in Washington — or even in state governments — are too remote to be personally affected.

Whether decentralized decision making is appropriate depends on how local a problem is and whether having different rules in different areas would create significant coordination problems. For cleanup standards at a specific Superfund site, coordination problems are likely to be minimal: the problem is local, its impacts are local and remediation activity can be concentrated. For ground-level ozone, the problem is less discrete.

Firms often balk at decentralization, saying that it is costly or even impossible to meet 50 different standards in 50 different states. It is unwieldy for firms to meet different labeling requirements or material input standards — for example, state-specific recycled content requirements — or to produce products that meet diverse safety or emission standards.

The solution is to eliminate input and output regulations. For many input and output decisions, price signals in the marketplace already function rather effectively. For others — for example, air emissions — command-and-control mandates may be inappropriate. Emission charges, an alternative approach, would allow firms to decide whether to respond with a single control technology in all their plants or to tailor their remedies to specific locations. And sometimes, where a potential harm is well understood, poses acute dangers and varies little by location, a universal federal rule establishing acceptable levels may be appropriate.

Do No Harm Principle: Action should be taken only where it is clear that more good than harm will result. This principle is common sense, but it is often violated. The reason is that the principle often requires us to do nothing, especially where the cause and effect are uncertain. The principle defies the natural human inclination to do *something*, even if it is the *wrong* thing, in the face of a problem.

For example, both the EPA and the FDA regulate the use of pesticides and residues in food, on the theory that they are carcinogenic and thus a threat to human health. Evidence suggests that the risks are trivial, and the regulations are costly. They lower the output of fruits and vegetables and raise their costs to consumers. Further, fruit and vegetable consumption is a major weapon in the war against lung, stomach and colorectal cancer and other

“The decentralization principle requires that the decision be made by those directly affected by it.”

illnesses. The National Research Council's Committee on Diet and Health has emphasized that the increased risk of exposure to pesticides is much lower than the potential benefits from greater consumption of fruits and vegetables.³³

Some people still worry about even these small risks. For them, the marketplace provides options, since an unmet need is an invitation for an entrepreneur to succeed. In the realm of pesticide-free food, farmers are responding with organic produce. Also, labeling programs are helping consumers know what they are buying and agricultural extension programs are helping farmers reduce pesticide use without jeopardizing productivity or food quality.

Balancing Principle: Where decisions must be made collectively, the benefits of a chosen policy should always exceed the social costs. The world is full of opportunity costs. If we undertake x, we cannot do y at the same time with the same resources. This is why people compare benefits and costs (if only subconsciously) almost continuously. Society as a whole should do the same.

Cost-benefit analysis is a comparison of the estimated costs of an action with the estimated benefits it is likely or intended to produce.³⁴ Almost all business decisions involve some measures of cost vs. benefits. Yet many government decisions are taken without adequate consideration of either.³⁵

Many critics argue that one cannot place a dollar value on a human life or a natural resource. But that is not the intent of cost-benefit analysis. Rather, such analysis permits comparison of various options, all of which may be beneficial in some way but not all of which can be undertaken simultaneously.

Failure to engage in cost-benefit analyses is bad for humans and for nature. For example, researchers have found that wasting economic resources reduces our life expectancy.³⁶ In general, the wealthier a society is, the healthier its citizens are likely to be and vice versa. According to one estimate, for every reduction in national wealth of \$3 million to \$8 million, one additional premature death will occur.³⁷ Spending money on one activity, even if it reduces a particular risk, makes those dollars unavailable for other risk-reducing expenditures that might have produced greater gains in public safety. Even when the goal is protecting human health and ecosystems, at some point the marginal benefit derived from spending one more dollar is unjustified in light of other possible uses for the money.

Efficiency Principle: Other things being equal, social goals should be attained in the least costly way. All resources are scarce. As a general rule, there is little or no excuse for wasting resources in the pursuit of even the most noble goal. This is even more true when the resources used are not one's

"Failure to engage in cost-benefit analysis is bad for humans and bad for nature."

“The more complex the problem, the less likely it is to be solved by edicts from on high.”

own. The principle is both common sense and common courtesy, yet it is often ignored in the public policy decision-making process. The government should always strive to achieve social goals in the least costly manner because when resources are squandered to achieve a particular goal, fewer resources are available to achieve other goals. For example, each dollar spent above what is absolutely necessary to attain the desired level of clean air is unavailable to reduce other environmental hazards or human health risks.

Flexibility Principle: Individuals and firms should be free to meet regulatory requirements in the least costly way and to implement new and better ideas. Flexibility in decision making offers four benefits. It facilitates trade-offs that involve complex decisions, maximizes opportunities for expression of individual values, enhances innovation and encourages the efficient use of resources. The more complex the problem, the less likely it is to yield to edicts issued on high. And pick-the-winner technology strategies force everyone to suffer from bad choices and deter entrepreneurs from developing better ones.³⁸

Compensation Principle: Where possible, people should be compensated when they are required to provide public amenities. Sensible as this principle is, it is routinely violated. Consider some regulatory decisions made under the Endangered Species Act, wetlands rules and other environmental laws:³⁹

- Brandt Child of Moab, Utah, hoped to develop campgrounds and a golf course on his property; the federal government used the Endangered Species Act to block his plans because the rare Kanab ambersnail resided in the springs on his land.
- A Baptist congregation in Florida wanted to build a new church and adjacent parking lot; federal officials determined that the site was more important as a wetland.
- Retiree Margaret Rector of Austin, Texas, sought to sell 15 acres of land; the government blocked the sale because the land was a potential habitat for the black-capped vireo and the golden-cheeked warbler.

These are examples of policies establishing certain public amenities or public goods. Yet the government offered these people no compensation. It simply ordered them to leave their property in its original condition and thereby provide ecological benefits to the rest of us. No matter how vital or important the activity, it is improper to impose the costs of providing a public amenity on a single individual or small group. Instead, the cost should be spread over all who benefit from the policy. This is what we do in virtually all other cases where government uses private property to provide public goods such as schools, roads, airports and defense facilities.

The compensation principle is more than an issue of fairness. It gives property owners a financial self-interest in protecting habitat and preserving endangered species. In the absence of compensation, property owners are penalized by preservation and rewarded by extinction.

“The compensation principle gives property owners a financial self-interest in protecting habitat and preserving endangered species.”

For example, in the United States we have taken a regulatory approach to eagle protection by imposing a “thou shalt not kill” command. Yet this regulation has created perverse incentives for ranchers whose livestock is killed by eagles. Their incentive is to surreptitiously destroy the birds rather than to act as their stewards. Why? Because preserving the eagles means losing their livelihoods. In some cases their only option is to break the law in order to maintain the economic viability of their ranches.⁴⁰ And when the laws are such that they cannot be obeyed, then civil disobedience becomes the norm.

In the United Kingdom, some eagle lovers tried a different tack, one designed to harness rather than undermine the marketplace. They hired biologists to assess the extent of farmers’ losses from eagles preying on livestock. They determined that such losses could mean the difference between solvency and bankruptcy for some marginal farmers. Armed with this information, they asked an insurer how much an insurance policy against livestock loss from eagle killings would cost. Based on the biologists’ data, the insurer came up with a premium. The eagle lovers purchased the insurance, then asked farmers not to destroy eagles who were preying on their livestock. Instead, they invited the farmers to simply provide proof that eagles had killed their livestock so the insurer could compensate them. The result: the eagle lovers’ values were brought into consonance with the farmers’ pursuit of their livelihoods.

The idea of compensation is *not* about paying people not to pollute. Compensation is for situations in which laws result in “taking” (sequestering or withdrawing) land from usage, with the burden falling on the landowner and the benefits accruing to the public. Compensation for takings also is not intended to apply to health and safety regulations.⁴¹ The long tradition of nuisance law and property rights protections precludes one property owner from imposing harm on others unless those harmed agree to that nuisance in exchange for a benefit.⁴² Air, water and other pollution effects fall into the age-old common law categories of nuisance or trespass. The default rule is that producers don’t have a right to pollute. Hence, regulations to limit pollution are not a matter for compensation.

Filters for Collective Decision Making

Other things being equal, we should all prefer policies whose benefits exceed their costs. When the reverse is true, there is an undesirable waste of

“Principles are used to answer *should* questions, filters to answer *fact* questions.”

resources. However, we do not get good public policy if cost-benefit rules are imposed inappropriately. For example, it is unwise for the federal government to try to make cost-benefit decisions in cases where local individuals or businesses have all the relevant information. Conversely, we do not want individuals or local businesses imposing their own cost-benefit calculations in circumstances that are national or worldwide.

Decision-making filters help us determine the appropriate *context* for applying the principles discussed above. Unlike the principles, which are based on value judgments, filters are used to sort objective evidence. Whereas principles are used to answer *should* questions, filters are used to answer *fact* questions. The following are some examples:

Consensus filters partition problems based on whether a consensus exists. Lack of a national consensus creates a presumption in favor of the decentralization principle and local decision making.

Divisibility filters partition problems based on the degree of divisibility. Problems that have no national or global effects and that lack a national consensus also fall to local decision makers.

Knowledge filters group problems based on society’s knowledge of cause and effect of a problem. If the knowledge is limited, the do no harm principle suggests that the justification for acting on those problems is also limited.

Risk filters group problems based on the degree of risk they pose. When the threat to health or safety is high, then the flexibility and balancing principles suggest a strong case for strict regulation. If the threat is low, the same principles indicate that government should set standards and let companies decide how to meet them.

Strategy filters partition problems based on the potential for different types of solutions. For example, to reduce a pollutant we could regulate it, use the tort system, impose taxes or fines or create tradable property rights. Once potential solution strategies are identified, we could employ the balancing and flexibility principles to choose among them.

Ownership filters partition problems based on the degree to which property rights are defined and protected. If resources are owned, using the individualism and compensation principles can improve social well-being by clarifying and enforcing responsibilities for environmental wrongs and by rewarding individuals that positively contribute to environmental quality. Where resources are unowned or property rights are not well-defined, it is appropriate to apply other filters and principles that follow from their application.

“Filters help us establish decision-making hierarchies.”

Information flow filters separate problems based on the potential for enhancing channels of information. Many problems can be solved by improving the flow of information so that individuals can make wise decisions. Once opportunities are identified, the principles can be used to help choose among them. When information flow solutions do not exist, it is appropriate to look at other filters.

These filters help us establish decision-making hierarchies. For example, we would want to consult the consensus filter and the divisibility filter before applying the decentralization principle. That is, we would want decentralized decision making only after we first determine that there is no national consensus and that the problem is truly divisible. We also would want to consult the divisibility filter before we apply the balancing principle. A true balancing of costs and benefits can take place only at the level of decision making where all relevant factors are being considered.

How Can the Principles and Filters Be Applied in Specific Policy Areas?

Broadly speaking, there are at least three distinct kinds of environmental problems: pollution problems, resource use problems and land use/habitat problems. For each, we need to rethink environmental policy by asking a few fundamental questions. What decision processes would allow us to give robust expression to environmental values in a world of constraints, complexity and conflicting preferences? What processes would help reduce conflict? What is the role of market decision processes? And what are the roles of governing institutions, including courts?

Applying the Principles and Filters to Pollution Problems

Air, water and noise emissions can give rise to pollution problems. They emerge as residuals from production and consumption and are dispersed into the air, water bodies or soil. The dispersed residuals may harm people or their property without any compensation being paid. What should be done about this problem?

Although privatized decisions function reasonably well for resource use issues and land use/habitat issues, they are difficult to construct for many pollution problems. Hence, the latter problems offer the broadest scope for collective (though not necessarily government) decision making. The challenge is to apply the principles and filters discussed above to each pollution problem and determine what if any action is warranted.

Consensus filter. On certain pollution problems, the level of consensus or the desire to reach consensus is so high that a national solution is indicated. For example, the harm from improper nuclear waste disposal is likely to be confined to a small area in the state that acts as a disposal site, but

citizens may prefer a national rule. Disposal of highly toxic solvent is another example. Almost all solvents have purely local effects, but people may prefer a uniform national restriction on the riskiest chemicals. However, these cases are exceptional.

“Since most problems are divisible, decentralized decisions are usually preferable.”

Divisibility filter and Decentralization principle. Since most environmental problems are divisible, their impacts are local and no national consensus exists, decentralization usually is a reliable guide. Different pollution problems have different spheres of impact. For example, ground-level smog produced by vehicles is largely a problem confined to individual air basins. Problems associated with hazardous contaminants in soils also are local, with little chance that the pollutants will migrate substantially. However, air emissions that reach the stratosphere may have regional or even global impacts. The locus of impact of a pollution problem should help determine where the decision-making authority ought to reside. [See Figure I.]

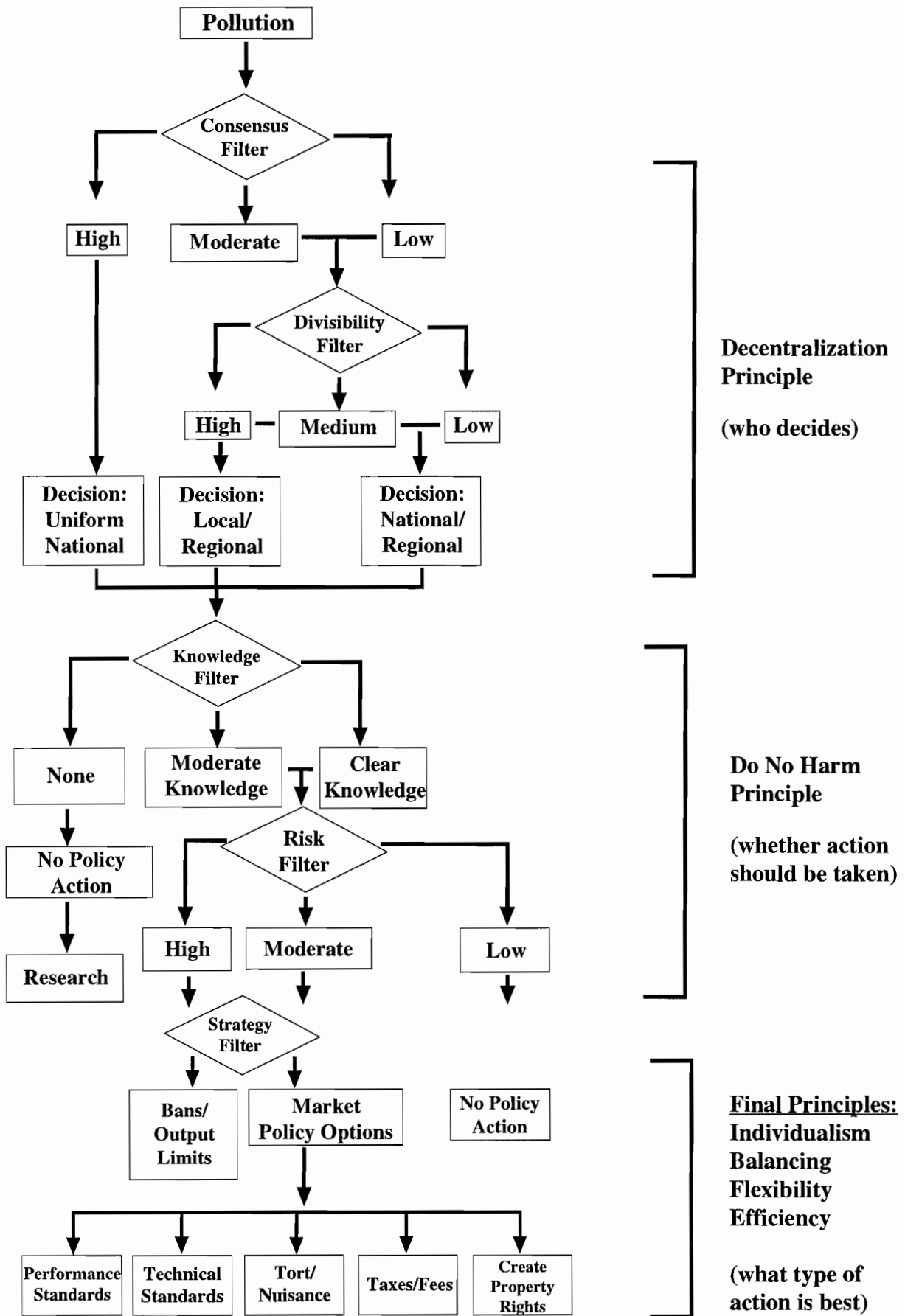
Knowledge filter. It is obvious that before launching any major policy initiative to reduce pollution, we must understand what is causing the problem. For some pollution problems, the cause-effect link is well established. We know, for example, that automobiles are a major source of several kinds of air pollution. Vehicle air emissions are therefore an important target of air emission reduction strategies. Further refinement in our understanding of the cause-effect relationship between automobile use and air pollution can help pinpoint the most cost-effective solutions. We know, for instance, that about 10 percent of cars account for more than 50 percent of vehicle air emissions.⁴³

The transparency of the cause-and-effect relationship between an emission and a harm varies for different pollution problems. In some instances, harms from pollutants are swiftly felt and clearly identifiable. In other instances, harms result only after decades of cumulative exposures. In the latter cases, it may be difficult to connect the harm to a specific substance and at least as difficult to identify and hold accountable the polluter. Where the cause-effect relationship is clear, use of the strategy filter may isolate tort as the most efficient way to deter harmful activity.⁴⁴ Where the linkage is less clear, performance standards or regulations may be preferable.

Risk filter. Different pollution problems generate different degrees of nuisance or harm. Where a pollutant is known to be very risky, a sensible policy might be to restrict its use — particularly where offsetting benefits are few or ready replacements are available.⁴⁵ If a pollutant creates little or no risk, the case for inaction is strong. However, as Figure I shows, for intermediate risks a number of options need to be considered, depending on the causal link between the pollutant and the harm.

Do No Harm principle. For any pollution problem, even with full knowledge of the cause-and-effect relationships and the risk of harm involved, questions remain. Among the most important: (1) What policy options are

FIGURE I



Decentralization Principle
(who decides)

Do No Harm Principle
(whether action should be taken)

Final Principles:
Individualism
Balancing
Flexibility
Efficiency
(what type of action is best)

available to solve or minimize the problem? And (2) of the available options, will any inflict less harm and incur lower costs than the problem they are intended to solve? If no realistic options exist or if the options do exist but implementing them would do more harm than good, inaction is the best policy.

Strategy filter. For almost any pollution problem, several policy options are available because risks are difficult to measure, costs hard to determine and trade-offs inherently controversial. Accordingly, different strategies must be formulated based upon a careful consideration of the previous filters and principles. These strategies must also incorporate the following principles.

Individualism principle. So far, architects of pollution abatement policies in the United States have relied largely on regulations. They have set standards, dictated technological fixes to specific problems, defined allowable production processes or mandated certain product configurations. Superfund policies for hazardous waste cleanups follow this model, as do clean air and clean water policies.

The individualism principle challenges us to allow individuals, neighborhoods or communities to negotiate their own solutions.

Consider the solution that allows England's angler (fishing) clubs to fish specific streams.⁴⁶ Economists Terry Anderson and Don Leal have explained how a form of property right gives the clubs an incentive to protect streams against potential polluters. Because the clubs have fishing rights, polluters are subject to liability challenges. Thus anyone considering putting effluents into their streams must negotiate with the clubs over an acceptable level of emission. Over many decades, the angler clubs have recovered significant sums from polluters. But the clubs do not necessarily require pristine waters. Voluntary transactions between those with fishing rights and other potential users of the stream determine the required level of cleanliness. The transacting parties have an incentive to seek water levels that are pure enough to sustain healthy fish populations but that allow some discharges. The anglers use the revenues to help pay for such activities as riparian management, fish stocking and habitat improvements.

Even where collective action is needed, the individualism principle can encourage less prescriptive rules. For example, vehicle emission fees, set at levels that reflect a reasonable evaluation of the "costs" of pollution, would leave travel decisions in the hands of individuals. Faced with paying for their emissions, some consumers might drive less; some might purchase low-polluting vehicles; some might carpool and share the cost with others; some might switch to public transport; some might decide that continuing their current driving habits is worth the extra fee.

This approach contrasts starkly with requirements for the use of specific fuels, electric vehicles or particular drive times.

"Faced with paying for their own auto emissions, some people might drive less."

Balancing principle. With quality of life and the protection of the earth at stake, talking about costs strikes many people as crass and irrelevant. This is because the notion of cost is often understood as an argument on behalf of greater corporate profits. But cost, as explained above, simply refers to the sacrifices — in time, other resources, forgone opportunities — that accompany the pursuit of any activity. That all human endeavors have costs in this broad sense does not mean they are not worth doing. Dollar costs simply provide a measure by which we can compare what we must give up to do one thing to what we must give up to do another.

Every public policy needs to satisfy a cost-benefit standard, and legislators or regulators must evaluate costs and benefits before arriving at collective decisions. Pursuit of zero emissions is usually not realistic, whether in the air, in soils or in water. Understanding how much it costs to eliminate each additional ton of carbon monoxide emissions from the air and weighing that incremental cost against actual improvements in human and ecosystem health would enhance — not reduce — our overall quality of life.

Contrary to its opponents' worries, cost-benefit calculation need not require massive research and sophisticated economic analysis. Often, the costs to clean up each additional ton of a pollutant rise slowly as one moves to clean up the majority of that pollutant. Only in the final cleanup stages do costs climb dramatically. At that point, we must seriously consider whether the additional expenditures are worthwhile. There is no magic formula, but incorporating cost-benefit analysis into environmental regulations can constrain escalating costs that promise marginal benefits.

Efficiency principle. Pollution control is not free. Resources devoted to controlling the discharge of pollutants, removing them from the soil and water or recycling them are resources unavailable for other worthwhile pursuits. For example, money spent on removing soil at a Superfund site or on related law suits is no longer available to build a new hospital or to pay for classroom computers. Collective decision makers should always strive to achieve social goals in the least costly manner.

Flexibility principle. When policy makers prescribe specific technologies or pollution-reduction protocols, they are limiting technical innovation and the application of site-specific knowledge.⁴⁷ For example, under the Clean Air Act of 1977, Congress required the use of “best available control technology” standards. All coal-fired generating plants were required to install stack-gas scrubbers; plant operators could not meet the standards by using low-sulfur coal, a less costly option. The scrubber requirement on new plants slowed the rate of replacement of older, dirtier utility boilers.⁴⁸

The flexibility principle asks that different policy alternatives be evaluated in terms of their restrictiveness. Bans are the least flexible of remedies, while tradable pollution permits and vehicle emission fees are more flexible — and are more likely to produce innovations.

“Decision makers should always try to achieve social goals in the least costly ways.”

Bottom Line: New Tools for Pollution Prevention & Control.

Applying the environmental covenant — using these filters to sort information and these principles to make decisions — would translate into less pollution and more efficient, effective pollution control. It would:

- steer decision makers — public and private — toward results rather than process;
- create opportunities for firms to pursue pollution prevention — not just pollution control;
- shift more dollars toward solutions and away from litigation and punishment; and
- reduce bureaucratic opportunities to shift pollution problems from one medium, for example, air, to another, such as soil or water.

A concrete example of how filters and principles could improve pollution prevention strategies is in the improvement of air quality due to the prevention of auto pollution. Currently, most vehicle smog check programs, following EPA guidelines, require annual or biennial testing of all automobiles. This requirement imposes costs and inconveniences on all motorists, with little or no improvement in air quality resulting. Yet for much less sacrifice we could have cleaner urban air if we took direct action against the 10 percent of cars that cause 50 percent or more of the pollution.

The strategy filter would obligate government to consider alternatives to current EPA guidelines. The efficiency principle would obligate government to choose less costly alternatives. The divisibility and decentralization principles would empower states or localities when pollution impacts were not widespread. The individualism principle might lead to the development of graduated vehicle emission fees.

The principles would apply not only to the EPA but also to the departments of Energy, Defense, Agriculture and Transportation and to state energy, transportation and agriculture agencies. Applying these principles and filters would constrain all the relevant bureaucracies to consider environmental goals and risks before they make decisions. Moreover, these principles require that all property owners — public and private — be held responsible for environmental impacts imposed by their actions.

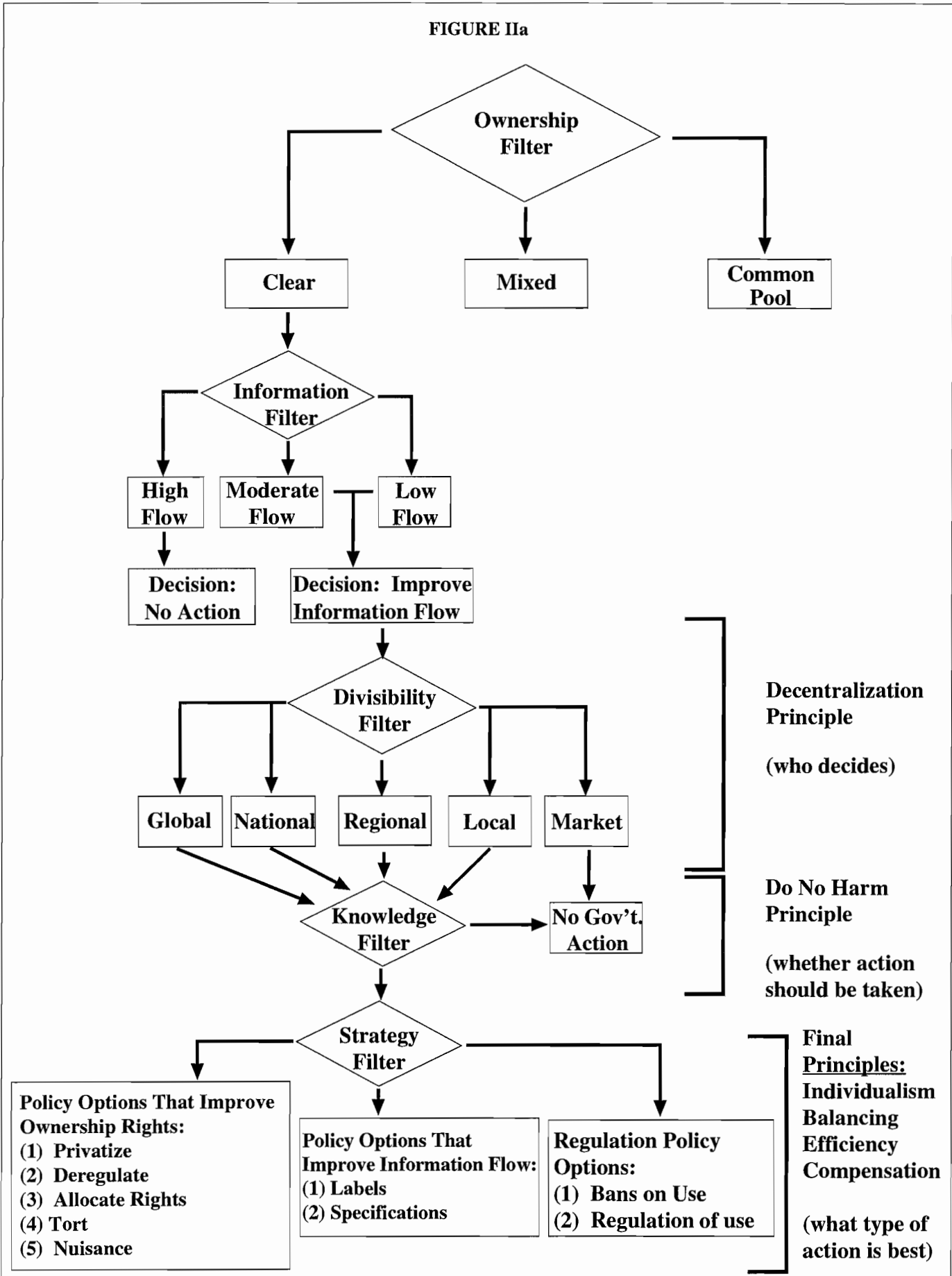
Applying the Principles and Filters to Resource Use Problems

Are we running out of such resources as fish and minerals? If so, is this a problem we want to correct and how can we best do so? Our filter approach to problem solving tackles the issue in Figure II.

For some resource use issues, market decisions function fairly well. In other cases, market institutions can be created. Two features of most resource

“The covenant should lead to a cleaner environment.”

FIGURE IIa



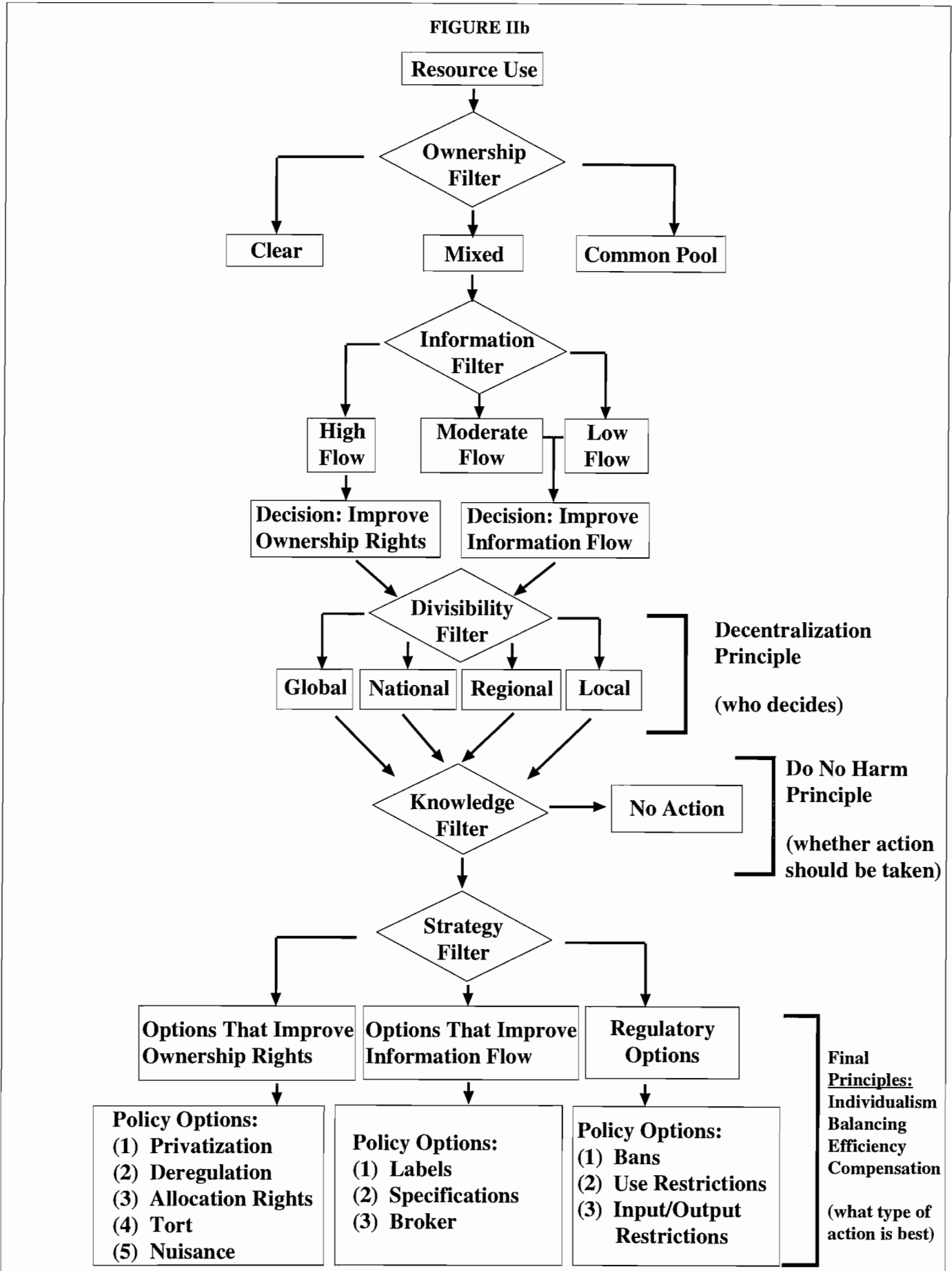
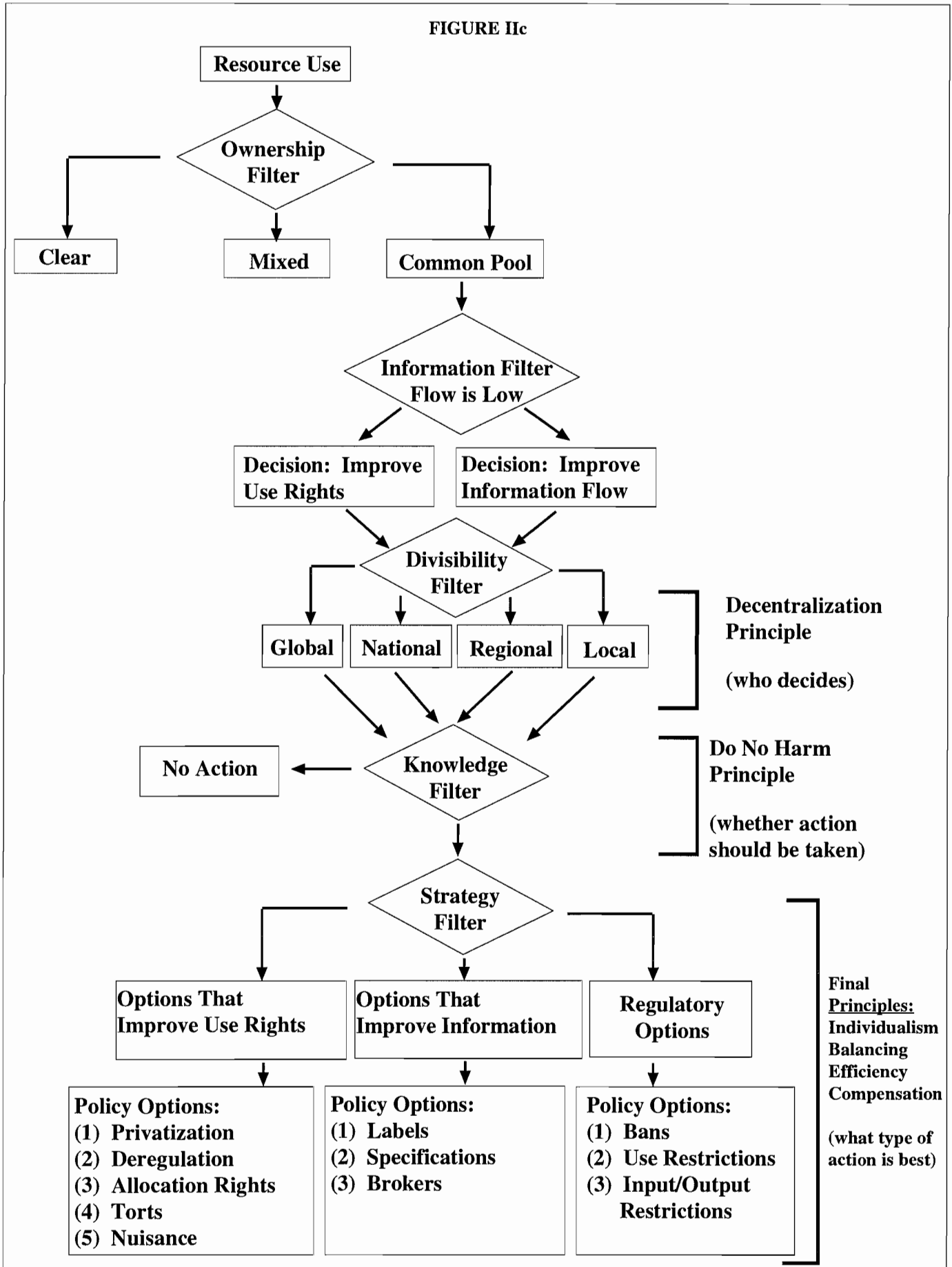


FIGURE IIc



issues account for the success of the marketplace. First, *most* resources are owned. When they are consumed the owner pays a price — the opportunity cost of not consuming and selling the asset to someone else. Second, most resources are traded at market prices, which subtly balance demand and supply. However, as in the following cases, the best solution is determined by the nature of ownership rights.

Case I: Clear Ownership. Ownership of most resources traded in the marketplace is clear. Because the resources are owned, market transactions involving them can occur. And through market transactions, prices emerge that reflect the relative scarcity of each owned resource. When demand for, say, oil goes up, prices rise. As prices rise, entrepreneurs are motivated to find either new supplies or substitutes. Prices tell us which resources are becoming relatively scarce, and people typically respond by conserving, switching to alternatives or finding new supplies.

Such conservation processes are ill suited to top-down rule making and properly left to the marketplace.

Sometimes, even though resource ownership is clearly established, price signals are ineffective. This occurs when the amount or quality of information that flows between owners (sellers) and buyers is poor. For example, in the 1800s farmers in the United States started producing corn. Consumers wanted to buy it, but two problems arose. First, buyers could not be certain what quality of corn they were getting ahead of time, so they could not arrange long-term contracts — making it difficult for both farmers and buyers to plan and invest. Second, farmers' information about buyers was often very local, causing a wide spread in prices that made markets inefficient.

Entrepreneurs remedied this problem by creating a commodities market that guaranteed quality and centralized information about supply and demand. By reducing uncertainties, they made long-term corn contracts possible.

Consider also the example of electrical outlets. When electricity was introduced, there was no single way to make a wall socket, and consumers were never sure an appliance plug would fit their wall socket. In response to the problem, the appliance industry voluntarily developed uniform standards and specifications. Today, Underwriters Laboratories, a private organization, assures that certain products perform as the manufacturers promise, and the American Society for Testing and Materials (ASTM) develops specifications for diverse products. The improvement in consumer and manufacturer information makes markets function better.

Today, markets for recyclables are hindered by a lack of information about supply and demand and a lack of uniform quality. One remedy to the information flow problem is to mimic the experience of corn farmers and

“The most appropriate solution to resource use problems will be determined by the nature of ownership rights.”

“It is important to have some basic criteria against which to evaluate possible options.”

socket manufacturers. This is already beginning to be done; the Chicago Board of Trade now lists some recyclables.

The knowledge filter helps us think about the nature of the resource problem. Is ownership clear? If not, why not? The decentralization filter helps identify the appropriate level for decision making and problem solving. Once we have determined these matters, we still need to find appropriate remedies. Here is where it is important to have some basic criteria against which to evaluate possible options. We have already discussed why costs matter. We have also discussed how most relevant information about environmental problems, trade-offs and constraints is fragmented, dispersed and dynamic. And we have discussed the importance of developing solutions that give expression to the diverse values and preferences of many individuals.

These concepts shape the criteria against which we should evaluate different policy options. Three criteria are especially important:

- 1) How much flexibility does the option offer individual decision makers?
- 2) What are the costs and expected benefits of implementing the proposed option, including the transaction costs to monitor and enforce the policy?
- 3) How well does the option allow different individuals and different locations to balance multiple values in a context of constraints?

Consider the problem of a weak market for recyclables because of poor information and uneven quality of materials. One option is to try to increase demand by mandating the labeling of products and packages to indicate how much recycled content they contain. The premise of this approach is that consumers want products with recycled content and that if they know which products have such content they will buy the products. Products with recycled content thus will gain market share, and manufacturers will have an incentive to increase the recycled content in their products.

Another option is to create a formal commodities market to centralize supply and demand information and create supply standards. In this case, users for whom using recycled content might be cost-effective will be better able to secure quality materials at market-clearing prices.

Both options meet the first and third criteria fairly well. Both allow the producer complete flexibility regarding what to produce and how to produce it. Both meet the flexibility test. And both allow individual producers and consumers to decide how to juggle competing values in a context of constraints.

However, the two options are not equally cost-effective. Labels involve implementation and monitoring costs. Product manufacturers would

have to determine the recycled content they use and redesign their labels to incorporate that information. Regulators would have to monitor whether the advertised recycled content amounts were actually being maintained. Because measuring recycled content is often impossible, this monitoring would require a paper trail from the material manufacturer to the end user.

By contrast, setting up a commodities market would involve some up-front costs. But once established, such a market could be self-financed and monitored by its participants. The enforcement costs of preventing fraud and ensuring that contracts are carried out would be assured by the financial self-interest of the market participants.

Case II: Mixed Ownership. Sometimes resources are owned, but either regulations or poor enforcement of ownership rights interrupts the incentives for stewardship or restricts information. For example, when natural gas prices were regulated, natural gas users did not get information about scarcity of supplies in relation to demand. And owners had no incentive, when demand was high but prices were suppressed, to invest in more natural gas exploration.⁴⁹

Or consider water policy. Subsidies for Western water use, for example, give farmers inaccurate information about the actual scarcity of water relative to demand. Because water is cheap, it seems abundant. The result is an incentive to produce water-using instead of water-conserving crops.⁵⁰

Regulations that prohibit use of recyclables have a similar effect. In this instance, demand is curtailed, so generators of recyclables have no incentive to collect and process more materials. For example, federal laws are so ambiguous that used motor oil is sometimes considered a hazardous waste. This designation can impose costly regulatory requirements that inhibit motor oil recycling.

In other instances, resources may be owned, but governments may not fully enforce ownership rights. For example, if government builds a landfill next to my house and denies me compensation for noise and other nuisances, my well-being may suffer and my property values decline. Or if I own a fishing stream, and the government fails to uphold trespass laws, my stream may soon be fished out. This is what befell some Native American tribes whose historical fishing grounds were not respected as private property. Ironically, some statutory laws setting standards for air and water pollution may have had a similarly negative effect. In one case concerning noxious gases, a Pennsylvania court failed to provide remedies to complainants, determining that “the Legislature has provided a statutory method for resolution of the alleged problem,” rather than allowing a common law approach in which an injunction against the harmful activity is invoked or damages are paid to the complainants.⁵¹

“Sometimes resources are owned, but regulations or poor enforcement of ownership rights interrupts the incentives for stewardship.”

One way to remedy problems stemming from a failure of governments to enforce rights is to create additional regulations. In the case of recycling, policy makers could simply mandate the use of some levels of used motor oil. But this approach violates the flexibility principle and overrides the specific constraints that face individual consumers of motor oil. Another approach is to remove regulations that impede price signals. And in situations where enforcement of rights is lax, an obvious remedy is to strengthen tort, nuisance and contract law.⁵²

In some instances, public policies are not appropriate at all. Improving the environment may be a matter of simply improving private sector information. For example, companies can undertake environmental audits to identify opportunities for reducing costs by reducing wastes and recycling residuals.⁵³

Case III: The Common Pool. Sometimes resources are not owned. For example, ocean fish and whales have market value, but no one owns them. The result is that neither consumers nor “harvesters” have clear information about their scarcity. Their market prices reflect only current supplies, not the prospects for their depletion. And since no one owns the sea creatures, no one has an incentive to invest in their cultivation.

Here the problem is not one of improving information flows by establishing quality standards or a centralized commodities market but of better defining rights to the resource.

The first question to ask is: how divisible is the resource? Is it confined to a specific locale such as an oyster bed? Does it move through regional boundaries, as do some kinds of fish? Does it occupy a global habitat, as do whales? These questions help apply the *decentralization principle* to find the appropriate decision-making level.

The next step is to identify the options for creating clearer use rights. This can occur through privatization, as has been done with some oyster beds, or through fishing quotas and other use restrictions. An extreme remedy is an outright ban, like the international ban on sperm-whale harvesting. Deciding what makes sense requires examining the relative costs and benefits of different options, the degree of flexibility each option offers and the degree to which each option supports individual decision making and individual values.

Bottom Line: New Tools for Resource Conservation. Over the past century, many environmental problems have emerged as an unintended side effect of government infrastructure and resource development policies. These policies, which have resulted in the construction of dams and highways, the development of mineral and energy resources and the expansion of the American “food basket” have generated substantial benefits. However, the policies often were pursued in isolation from other goals, such as environmental protection, and at great cost.

“Unowned resources have no natural protectors and defenders.”

Respecting the covenant would correct the government's tendency to cause environmental problems as side effects of other policies. The balancing principle should provide a means of incorporating environmental values into such policy decisions by requiring government to account for the benefits of environmental quality and the costs of environmental destruction. The environment would benefit from:

- an end to artificially low irrigation water fees and below-cost timber harvesting;
- reexamination of policies that subsidize flood insurance and encourage development in areas sensitive to erosion and flooding;
- a reexamination of farm subsidy programs that encourage the overuse of pesticides; and
- a reexamination of dam and highway construction programs that damage the environment.

Applying the Principles and Filters to Land Use and Habitat Problems

Land use and habitat problems are special concerns of people who wish to preserve wetlands, old-growth forests, spotted owls and other examples of America's grandeur.

This category includes the problems cited by environmentalists in which no economic or tradable commodity currently exists, although wildlife and wilderness protection are amenities for which many individuals would be willing to pay.

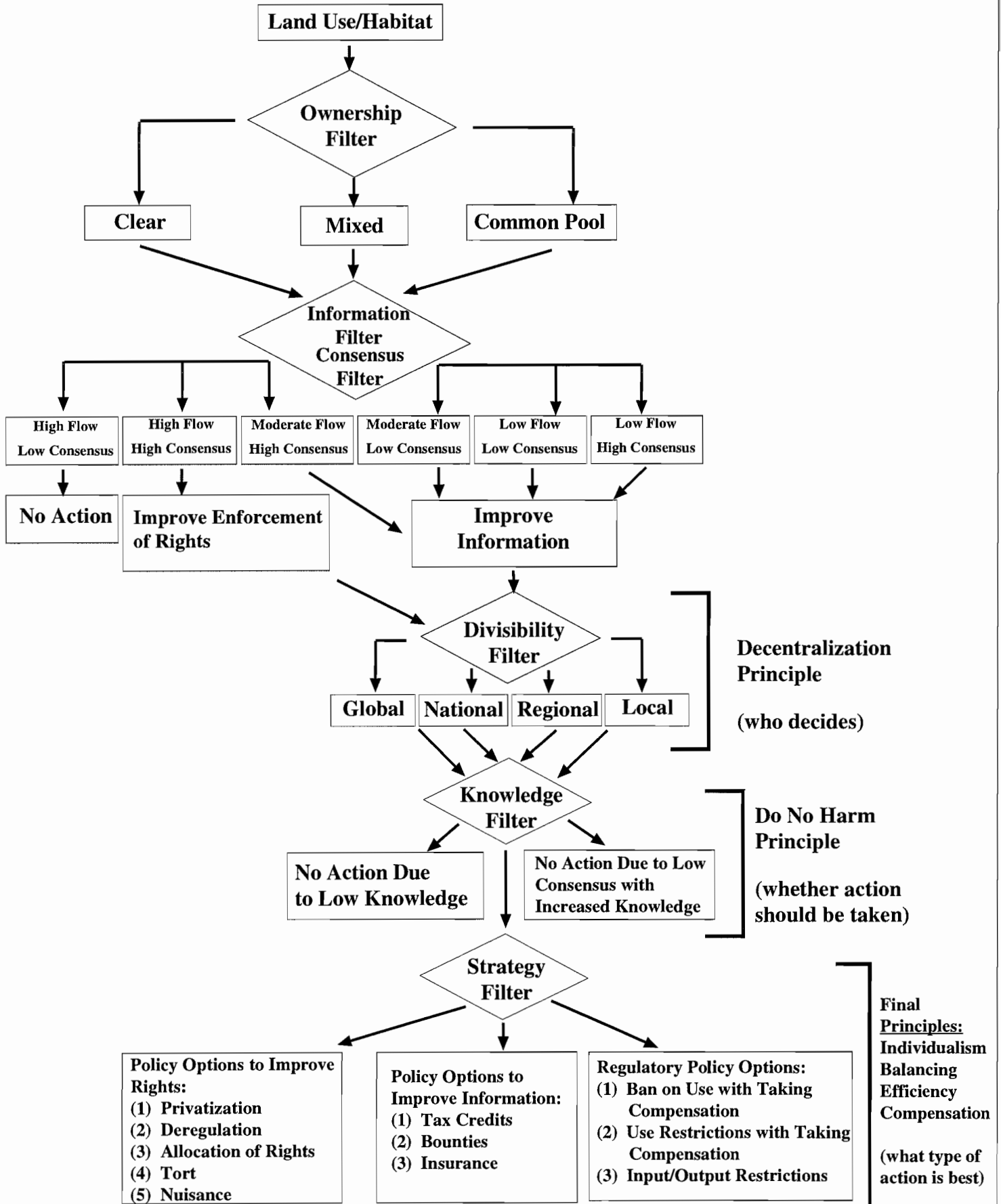
As with resource use, land use and habitat issues are reasonably amenable to private sector solutions that harness market institutions and individual choices. Options for private habitat and wildlife protection are not perfect. But understanding how property rights create spheres of autonomy and conditions of stewardship point to the resolutions of many habitat problems. [See Figure III.]

Habitat and wildlife protection demands a full understanding of local ecologies. Top-down federal edicts like those associated with the Endangered Species Act often fail to take local circumstances into account. For example, a San Diego County rancher was told that a plant species on his property was endangered. He was required to sequester the plants by fencing them in to prevent cattle from eating or tramping on them. Once this plan was put into place, the plants started dying. It turned out that the cattle's presence helped the plants survive.⁵⁴

Case I: Clear Ownership. In many instances, wilderness is privately owned and protected. Mrs. Rosalie Edge's Hawk Mountain is one notable example. The many thousands of acres owned by Ducks Unlimited is another.

"Habitat and wildlife protection demands a full understanding of local ecologies."

FIGURE III



In the latter case, members preserve wetlands not because they value the wetlands per se but because the wetland habitat ensures a duck population for hunters. Ducks Unlimited preserves more wetlands in the continental United States than the entire federal wetlands preservation program.⁵⁵

In some instances, ownership is clear, but information about environmental impacts is not. For example, the effect of logging on some bird habitats was poorly understood in the past. In part, this lack of understanding reflected a lack of interest in such protection. But even when wildlife protection became important to many citizens, the relationship between logging practices and wildlife protection was sometimes unclear.

One approach to this problem is a regulatory one in which public agencies prescribe or mandate particular logging practices. The regulatory approach taken in the Endangered Species Act mandates protection of certain species and often requires that specific practices be followed. Both of these approaches run afoul of the knowledge problem; what logging practices best combine habitat protection with efficient logging depends on local conditions. Regulatory approaches also do little to create incentives to protect habitat.

Policies that compensate owners for setting aside land or that offer them bounties for protecting wildlife are better because they combine economic incentives with decentralized decision making about appropriate protection practices.

Consider another example. Many forests are privately owned and managed to maximize returns from lumber sales. The owners have an incentive to maximize the forests' economic value but not its amenity values. And sometimes managing a forest for maximum returns from lumber sales reduces those amenity values, including the abundance of wildlife.

If people value increased preservation of forest habitats, one option would be to prohibit cutting the trees. Another would be to regulate forest management. These are the current approaches to federal and state forest habitat protection.

Yet another approach would be to strengthen forest owners' incentives instead of eroding their property rights. For example, the government could pay, through a competitive bidding process, forest owners who come up with management plans that enhance amenity values. Since such management plans may reduce proceeds from timber, such a bidding process provides incentives and compensates private forest owners for forgoing some timber revenue to provide more amenity values. Another approach would be to give forest owners management responsibility for the wildlife on their lands, effectively privatizing the wildlife and turning a liability into an asset. Unlike nationalization of private forests or bans on timber harvesting, these market-oriented approaches would encourage forest owners to optimize several values simultaneously.⁵⁶

"Market-oriented approaches to problems could encourage forest owners to be responsible managers."

Case II: Mixed Ownership. Sometimes habitat and land ownership law exists, but courts and other government bodies fail to adequately enforce against nuisances or harms. At other times government regulations shield landowners from the consequences of their decisions.

Consider two examples. Citizens who live or work near government-owned noxious facilities — say, landfills, nuclear power plants and hazardous waste sites — sometimes are precluded from seeking compensation for any harms. They may be able to seek an injunction against their creation, but if that fails they cannot get compensation for harms or nuisances. They may suffer a reduction in property values and well-being, while those building the noxious facilities are cushioned against claims.

Or take mandatory federal flood insurance. The federal government offers low-cost flood insurance and compensation to landowners who suffer flood damage. The subsidized flood insurance shields individual landowners from the actual costs of building and rebuilding in a flood-prone area.⁵⁷

Land development prohibitions are the traditional way to grapple with these problems. A better way, one in keeping with the principles of new environmentalism, is to strengthen the enforcement of nuisance and tort law and to eliminate subsidies that shield property users from the full consequences of their decisions.

Case III: The Common Pool. As discussed above, sometimes ownership of land or wildlife is unclear or is held by the public. In these instances, responsibility for stewardship is diffuse or even nonexistent. And people have incentives to usurp common pool land for their own purposes, while bearing little responsibility for the consequences of its use.

We have examined the common pool problem as it relates to resource consumption. But what about circumstances in which the land or the endangered biological species has no traditional economic value?

Again, the response to this kind of problem has long been regulatory. The Endangered Species Act was designed to protect such animals as the Stevens kangaroo rat and the Magazine Mountain shagreen (a snail). Similar approaches are proposed to protect species in the Brazilian rain forest. But not everyone values the protection of species, wetlands or open space. Sometimes proponents of protection win; other times they do not. Moreover, the all-or-nothing regulatory approach leaves little room for location-specific decisions and for the balancing of competing values.

Yet these values can be protected by moving away from uniform regulations toward privatization, long an American tradition. In the 1800s, New England conservationists created land trusts to preserve some natural landscapes in perpetuity. Private owners can exclude any or all users, while each taxpayer has a legitimate claim to the use of public land. The result often is conflict over use of public land, like that of off-road vehicle users, proponents of tortoise preservation and camping enthusiasts in Western deserts.

“In the 1800s, New England conservationists created land trusts to preserve some natural landscapes in perpetuity.”

Increasing Opportunities for Private Action. Sometimes, as private landowners share the desire for environmental protection or seek to respond to consumer needs, they independently embark on environmental audits to identify and protect sensitive habitats. Many logging companies employ biologists to develop habitat protection plans. Other companies undertake environmental audits to find out where their activities have the greatest impacts in order to mitigate them. And some, such as landfill companies, establish buffer zones and nature preserves around their operations to shield the public. These efforts need to be nurtured, not overridden by regulatory edicts.

In this regard, adherence to the covenant should create opportunities for landowners to benefit from the wildlife on their land, turning a liability into an asset. The strategies and information flow filters should obligate government to consider alternatives to the command-and-control approach. Applying the efficiency and flexibility principles, we likely would discover that we could accomplish more for the same social cost if we paid compensation or rewarded landowners for improving habitat and attracting wildlife to their property.

To take another example, environmentalists often have relied on the Endangered Species Act to indirectly protect ecosystems. The principles and decision filters make it possible to pursue habitat or ecosystem protection directly and holistically. For example, land trusts can set aside whole ecoregions, restricting their use without compromising individual property owners' rights. In such cases the environment is protected, the Constitution is preserved and wasteful, acrimonious litigation is precluded.

"A Unified Environmental Reform Statute would create procedures for decentralizing decision making and measuring successes."

Next Steps: What Can Congress Do?

The principles and decision filters of new environmentalism are tools with which to evaluate different policy options. They also provide a map to direct environmental policy reformers on their long, evolutionary road. Examples of specific public policies that reformers can encourage Congress and the administration to implement follow.

Unified Statute and Devolution. Passage of a Unified Environmental Reform Statute is a good first step. A unified statute would create procedures for decentralizing decision making and measuring successes. It could target the Clean Air Act, the Clean Water Act and the Resource Conservation and Recovery Act for revision through phased-in devolution and the sunseting of duplicative provisions. Because we know that many of the risks addressed by current legislation are trivial or nonexistent, the best decisions about these risks would be made locally. [Knowledge Filter; Risk Filter] Furthermore, different localities would discover and implement different solutions based on their unique conditions. [Strategy Filter]

Several ideas that have been outlined by the Washington, D.C.-based National Environmental Policy Institute serve as a useful starting point for such a statute. A unified statute should:

- Devolve to the states authority, responsibility and accountability for setting environmental goals where impacts are primarily local, implementing policy and monitoring success. [Decentralization principle] Where air basins or watersheds cross state boundaries, the states involved would have primary authority for setting acceptable standards, and the national role would be one of mediator. [Flexibility principle]
- Create sunset provisions to phase out existing legislation as revised environmental laws are introduced. As states and localities demonstrate increased competence and ability, they should gain responsibility for their environmental problems. They should not have their hands tied by cumbersome and outdated environmental statutes that dictate priorities, standards and technologies. Since new environmental problems arise and existing but previously unrecognized problems emerge over time, old programs should be eliminated so as not to hamper new solutions. [Efficiency principle, Do No Harm principle]
- Create a performance-based system that emphasizes ambient environmental standards, not the use of specific technologies. [Balancing principle, Flexibility principle, Efficiency principle]
- Establish mechanisms for developing ambient standards and issuing permits so that emission permits could be freely traded.⁵⁸ Permits could take the form of contracts or covenants. [Flexibility principle, Individualism principle]

Civic Environmentalism Act. The second step to environmental reform by the Congress would be a Civic Environmentalism Act shifting emphasis away from punishment and toward problem solving, bargaining, technical innovation and information exchange. Such an act would begin the privatization of decisions regarding environmental problems. It also would encourage bargaining approaches for Superfund site cleanups, brownfields redevelopment, federal facilities cleanups, toxic emission standard setting and other problems with primarily local impacts. Many states have passed legislation to promote voluntary environmental audits by private firms. Firms need assurances that these voluntary audits will not result in penalties, fines and prosecutions for environmental problems uncovered — and corrected. A Civic Environmentalism Act should include similar audit protections at the federal level. The act would:

- Reform environmental enforcement by clarifying which actions are subject to criminal penalties and which to civil and administrative

“Emphasis can be shifted away from punishment toward problem solving.”

proceedings, bring sentencing guidelines for environmental crimes into conformance with those for comparable crimes and eliminate multiple prosecutions for a single violation. [Efficiency principle]

- Develop and allow states to develop “environmental audit privilege” laws, providing immunity from prosecution to companies that seek out, disclose and correct violations of environmental laws. Current laws allow such information to be used against the company and its officials in criminal and civil trials. Audit privilege laws would end the perverse incentive to cover up environmentally harmful actions, increasing the flow and accuracy of information available to decision makers. [Information flow filter]
- Create an environmental extension program to help farmers and business owners reduce environmental impacts. Such programs could be funded privately or by shifting funds away from punitive approaches or using proceeds from pollution charges. [Decentralization principle, Flexibility principle]
- Facilitate the establishment of local market-like bargaining and negotiating processes. Some states and projects already have such processes. For example, some local communities convene informal task forces to weigh cleanup alternatives for brownfields. [Flexibility principle, Efficiency Principle]

Environmental Amenities Act. The third step would be an Environmental Amenities Act patterned in part after 1995 House proposals for takings compensation. The act would compensate property owners who lose some or all use of their property to public environmental amenities such as wilderness, wildlife and wetlands protection. The act would create incentives for environmental stewardship and relieve individuals and firms from providing public amenities at private expense. [Ownership filter] An Environmental Amenities Act would:

- Require takings compensation for private landowners who must provide public amenities. Such provisions would not include compensation for costs associated with regulations to mitigate pollution. [Balancing principle, Efficiency principle, Compensation principle]
- Require that private property be included in public environmental programs (e.g., habitat management plans, ecosystem management plans, national and international heritage sites and biosphere reserves) only with the permission of the owner(s) or upon the payment of takings compensation. [Individualism principle, Compensation principle]

“An Environmental Amenities Act would compensate property owners.”

- Empower states to encourage wildlife and habitat protection by using bounties and other tools that allow private parties to benefit from producing environmental goods. [Individualism principle, Flexibility principle]

Conclusion

At its deepest level, environmental policy making evokes questions about values. How are environmental values to be integrated with other individual values? To date, our political institutions have only crudely answered this question. Some environmental progress has occurred, but associated costs and conflicts are escalating.

By reexamining the problems, we can begin to find better solutions. Already, champions of reform recognize that environmental problems are complex. They recognize some of the applicable tools and unavoidable constraints. Yet their recognition is only one dimension of the environmental policy challenge.

The challenge is also conceptual and institutional. On the conceptual side, better policy making requires that we distinguish among pollution, resource-use and “public amenity” problems and offer different responses. On the institutional side, better policy making requires determining what institutions would best accommodate diverse values and reduce conflict among individuals and groups.

Institutionally then, better policy making requires defining and enforcing property rights and responsibilities, devolving collective decisions to the parties closest to the problems, relying on performance-based criteria and avoiding prescriptive rules. These institutional changes will nurture the more resilient, less contentious approach on which environmental progress and improved human well-being depend.

“We can do better, but doing better requires reexamining the nature of the problems.”

NOTE: Nothing written here should be construed as necessarily reflecting the views of the National Center for Policy Analysis or as an attempt to aid or hinder the passage of any bill before Congress.

Notes

- ¹ Gregg Easterbrook, *A Moment on Earth* (New York: Viking, 1995). See also William Rosenberg, "Our Air Is Getting Cleaner," presentation at Inside Washington Publishers Conference, The Clean Air Act: Market-Based Approaches to the New Statute, Arlington, VA, October 27, 1992.
- ² Marla Cone, "Southland Smog Levels Are Lowest in Four Decades," *Los Angeles Times*, Part A, October 21, 1995, p. 1.
- ³ Easterbrook, *A Moment on Earth*.
- ⁴ "How Clean Is Clean?" First Phase Report (Washington, DC: National Environmental Policy Institute, 1995).
- ⁵ Dale W. Jorgenson and Peter J. Wilcoxon, "Intertemporal General Equilibrium Modeling of U.S. Environmental Regulation," *Journal of Policy Modeling* 12, Winter 1990, p. 717.
- ⁶ John D. Graham, "Comparing Opportunities to Reduce Health Risks: Toxin Control, Medicine and Injury Prevention," National Center for Policy Analysis, NCPA Policy Report No. 192, June 1995.
- ⁷ See Kent Jeffrey, "Progressive Environmentalism: Principles for Regulatory Reform," National Center for Policy Analysis, NCPA Policy Report No. 194, June 1995, pp. 2-4.
- ⁸ Richard Stroup and John Baden, *Natural Resources: Bureaucratic Myths and Environmental Management* (San Francisco: Pacific Research Institute, 1983); Terry Anderson and Donald Leal, *Free Market Environmentalism* (San Francisco: Pacific Research Institute, 1991); Walter Block, ed., *Economics and the Environment: A Reconciliation* (Vancouver, BC: Fraser Institute, 1990); Alston Chase, *Playing God in Yellowstone* (New York: Atlantic Monthly Press, 1986); Bruce Yandle, ed., *Land Rights: The 1990s Property Rights Rebellion* (Lanham, MD: Rowman & Littlefield, 1995); Yandle, *The Political Limits of Environmental Regulation* (New York: Quorum Books, 1989); and Joseph L. Bast, Peter J. Hill and Richard C. Rue, *Eco-Society, A Common Sense Guide to Environmentalism* (Lanham, MD: Madison Books, 1994).
- ⁹ As author Gregg Easterbrook has cautioned, "There exists a wide range of human actions careless, selfish or destructive to the environment." See Easterbrook, *A Moment on Earth*, p. xix.
- ¹⁰ "Naturists" as used here refers to the non-science-oriented, emotive environmentalists.
- ¹¹ For example, in this model, ecosystems, absent human intervention, tend toward balance and stability over time.
- ¹² In recent years, the mistrust is being replaced by such ideas as "growth within limits" or sustainable development, but the emphasis is still on limits rather than dynamic entrepreneurship.
- ¹³ Gus diZerega writes that "new or organismic views of ecology do not attempt to reduce the natural world to any single set of standards. They instead focus on the incredible intricacy of environmental relationships...and the extraordinary creativity of evolutionary processes." See diZerega, "Unexpected Harmonies: Self-Organizing Liberal Modernity and Ecology," *Trumpeter* 10, Winter 1993, p. 28.
- ¹⁴ This is true of the complex interactions of human activity with ecosystems, the web of effects set in motion by each resource-use decision and the risks and benefits associated with each production, consumption and disposal choice.
- ¹⁵ See Friedrich A. Hayek, "The Use of Knowledge in Society," *American Economic Review* 35, 4 September 1945, pp. 519-30.
- ¹⁶ See Robert Worcester's discussion of Abraham Maslow's work as it relates to environmentalism in "Business & the Environment: The Predictable Shock of Brent Spar," presentation to The Prince of Wales's Business & The Environment Programme, University of Cambridge Programme for Industry, Cambridge, England, September 18, 1995.
- ¹⁷ *Ibid.*, p. 18.
- ¹⁸ *Ibid.*, p. 15.
- ¹⁹ For example, in Kassel, Germany, city officials passed a tax on all disposable packaging at fast food establishments. The tax forced many restaurants to switch to reusable service ware. Restaurants were not able to balance any potential health and safety trade-offs against the possible advantages of waste reduction. Instead, the decision became a unidimensional one, with waste reduction eclipsing all other concerns as a result of the high packaging tax.
- ²⁰ See Jane S. Shaw and Richard L. Stroup, "Should We Worry About Ozone?" National Center for Policy Analysis, NCPA Policy Report No. 191, June 1995, pp. 14-16.

- 21 In one sense, all values are noneconomic values. Economist Thomas Sowell points out that “the most widespread misunderstanding of economics is that it applies solely to financial transactions,” which leads to statements that some values are *not* economic ones. To this comment, Sowell responds that, indeed, “there are *only* noneconomic values. Economics is not a value itself but merely a method of trading off one value against another.” Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980).
- 22 This concept has been developed by Bruce Lippke and others at the University of Washington in Seattle. See Bruce Lippke, “Incentives for Managing Landscapes to Meet Non-Timber Goals,” presented at the Environmental Economics Conference, Banff, Alberta, Canada, October 1994.
- 23 Even in markets, individuals are never fully sovereign. Consider the thermostat setting in a room. I may prefer a 60 degree setting; you may prefer 70 degrees. We cannot simultaneously have both. Usually, the decision about temperature setting is made by a building owner, a building manager or a tenant. The rest of us must accept the resulting temperature.
- 24 Sowell summarizes this point in *Knowledge and Decisions*: “...denunciations of inefficiency and waste are often nothing more than statements of a different set of preferences. Schemes to turn particular decisions or processes over to ‘experts’ ...are often simply ways of allowing one group of people to impose their subjective preferences on others.”
- 25 *Environmental Quality*, 15th Annual Report of the Council on Environmental Quality (Washington, DC: U.S. Government Printing Office, 1985), pp. 387-94.
- 26 See U.S. Office of Technology Assessment, *Green Products by Design* (Washington, DC: U.S. Government Printing Office, 1992); J. H. Ausubel and H. E. Sladovich, eds., *Technology and the Environment* (Washington, DC: National Academy Press, 1989); and Lynn Scarlett, “Packaging, Solid Waste, and Environmental Trade-Offs” in *Illahee: Journal of the Northwest Environment* 10, no. 1, 1994.
- 27 Recently, soda can makers shaved another 1/1000th of an inch off the top and bottom of soda cans — the equivalent of one-seventh of a human hair fiber — to save even more on materials.
- 28 Garrett Hardin, “Tragedy of the Commons,” *Science* 162, November 11, 1986, pp. 1243-48. See also Garrett Hardin and John Baden, *Managing the Commons* (New York: W. H. Freeman & Co., 1977).
- 29 Property rights, properly enforced, establish conditions both of rights and responsibilities. In a sense, they create conditions of stewardship, since they directly link individuals to the outcomes of their actions. They also create boundaries for human action by restricting the spheres within which one can act autonomously. Beyond those spheres, autonomous actions are limited at a minimum by a “do no harm” principle. Within those spheres, individuals can pursue self-defined values, including both utilitarian values such as using the land to farm and spiritual values such as protecting natural habitats.
- 30 See John C. Goodman and Richard L. Stroup, “Progressive Environmentalism: A Pro-Human, Pro-Science, Pro-Free Enterprise Agenda for Change,” National Center for Policy Analysis, NCPA Policy Report No. 162, April 1991.
- 31 See, for example, Randal O’Toole, *Reforming the Forest Service* (Washington, DC: Island Press, 1988); Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Viking, 1986); Karl Hess Jr., *Visions upon the Land: Man and Nature on the Western Range* (Washington, DC: Island Press, 1992); Richard L. Stroup and John Baden, *Natural Resources: Bureaucratic Myths and Environmental Management* (Cambridge, MA: Ballinger, 1983).
- 32 See Rodney Fort and John Baden, “The Federal Budget as a Common Pool Resource,” in John Baden and Richard L. Stroup, *Bureaucracy vs. Government: The Environmental Cost of Bureaucratic Government* (Ann Arbor: University of Michigan Press, 1981).
- 33 National Research Council, Committee on Diet and Health, *Diet and Health: Implications for Reducing Chronic Disease Risk* (Washington, DC: National Academy Press, 1989), p. 695. In general, the risk to human health from either natural or man-made pesticides in our food supplies is negligible. The National Academy of Sciences implicitly recognized this fact when it recommended establishing “a negligible risk standard in setting and revising tolerances for all [carcinogenic] pesticides found in food.” See National Research Council, *Regulating Pesticides in Food: The Delaney Paradox* (Washington, DC: National Academy Press, 1987), p. 12. According to Dr. Sanford Miller, Dean of the Graduate School of Biomedical Sciences at the University of Texas, “Today’s pesticides represent trivial risks to the public and to our food safety. The pesticide residue risk is so low as to be meaningless, whatever the specific numbers of the risk estimates.” Cited in Dennis T. Avery, *Global Food Progress* (Indianapolis: Hudson Institute, 1991), p. 134.
- 34 For an assessment of the limits of cost-benefit analysis, see Robert Formaini, *The Myth of Scientific Public Policy* (Social Philosophy and Policy Center: Bowling Green, OH, and Transaction Books: New Brunswick, NJ, 1990).
- 35 This exercise does not necessarily require complex mathematical calculations. Often, the cost-benefit balance is very clear

up to a point at which costs of further mitigation escalate dramatically. At this point, more careful quantitative analysis of costs and benefits may be necessary.

³⁶ See, for example, Aaron Wildavsky, *Searching for Safety* (New Brunswick, NJ: Transaction Books, 1998).

³⁷ Daniel K. Mitchell, "The Deadly Impact of Federal Regulations," *Journal of Regulation and Social Costs*, June 1992.

³⁸ Economist Israel Kirzner has written that "entrepreneurship in individual action consists in endeavors to secure a greater correspondence between an individual's future as he envisages it, and his future as it will in fact unfold." Kirzner's comment suggests that we are better off if we have many competing "anticipators." Israel Kirzner, "Uncertainty, Discovery and Human Action: A Study of the Entrepreneurial Profile in the Misesian System," in Israel Kirzner, ed., *Method, Process and Austrian Economics: Essays in Honor of Ludwig von Mises* (Lexington, MA: Lexington Books, 1982), p. 151.

³⁹ Cesar V. Conda and Mark D. LaRochelle, "The New Populism: The Rise of the Property Rights Movement," *Commonsense* 1, Fall 1994, pp. 78-98.

⁴⁰ See, for instance, Ryan C. Amacher, Robert D. Tollison and Thomas D. Willett, "The Economics of Fatal Mistakes: Fiscal Mechanisms for Preserving Endangered Predators," in Terry L. Anderson and Peter J. Hill, *Wildlife in the Marketplace* (Lanham, MA: Rowman & Littlefield, 1995), pp. 43-60.

⁴¹ Ross Korves, deputy chief economist of the American Farm Bureau, puts it this way: "The argument is made that takings legislation would require the government to pay compensation to [a polluter] if a unit of government forced him to stop dumping waste into [a stream]. The takings issue is not relevant in this situation. Under common law and nuisance law ... no property owner has an unlimited right to harm the land of others or to create a public nuisance. The responsibility to not degrade others' property is a basic feature of the right to own and use property." Ross Korves, memorandum to American Farm Bureau members, 1995.

⁴² This has occurred in some communities that have agreed to see landfills sited locally in exchange for financial compensation and other benefits from the landfill operator.

⁴³ See, for example, E. M. Fijita and Douglas Lawson, "Evaluation of the Emissions Inventory in the South Coast Air Basin," Desert Research Institute, Reno, NV, August 8, 1994. This knowledge should steer us toward policies that focus on cleaning up the few gross polluters or getting them off the road. By contrast, going after the many clean cars will likely cost a lot of money and yield minimal air quality improvements.

⁴⁴ Roger E. Meiners describes the long history of effective use of tort law as a means of protecting individuals against harms caused by pollution in "Elements of Property Rights: The Common Law Alternative" in Yandle, ed., *Land Rights*, pp. 269-93.

⁴⁵ Consider a few examples. First is the case of lead poisoning in the Roman Empire. One of the earliest recorded epidemiology reports was of heavy metal poisoning that resulted from use of lead in Roman aqueducts. Second is the case of the "mad hatter," a term that came from the effects of using mercury in the making of felt hats. Third and more recent is the case of cadmium bioamplification in rice and soybeans in Japan; the cadmium was discharged in the effluent from mining operations and eventually worked its way into the food supply. In such cases, uniform strict standards or bans on the handling, use or disposal of these materials might make sense.

However, when these kinds of acute problems appear, the marketplace often moves quickly to eliminate them. For example, after it became clear that vapors from chromium-plating processes resulted in serious health problems for workers, industries found ways of safely containing the vapors. The same evolution occurred among dentists in their use of mercury amalgams. Dentists found ways of minimizing exposures to the mercury vapors created during preparation of the amalgams, and some dentists turned to substitutes. Trade associations, trade unions and professional organizations often promote change by providing safety information to members.

⁴⁶ Anderson and Leal, *Free Market Environmentalism*.

⁴⁷ Sowell wrote that "there is no reason to believe that people will generally make a better set of choices out of a smaller set of options, where the larger set includes all the options in the smaller set." See Sowell, *Knowledge and Decisions*, p. 128.

⁴⁸ Robert W. Crandall, "Ackerman and Hassler's *Clean Coal/Dirty Air*," *Bell Journal of Economics* 12, Autumn 1981.

⁴⁹ See Michael Crew and Paul Kleindorfer, *The Economics of Public Utility Regulation* (Cambridge, MA: MIT Press, 1986); see also Julian Simon, *The Ultimate Resource* (Princeton, NJ: Princeton University Press, 1981).

⁵⁰ See Robert Repetto, *Skimming the Water* (Washington, DC: World Resources Institute, 1986).

⁵¹ Meiners, in Yandle, *Land Rights*, p. 27.

⁵² For an excellent discussion of the use of the common law for protecting the environment, see Elizabeth Brubaker, *Property Rights in Defense of Nature* (London: Earthscan Publications, 1995).

⁵³ Audit protection laws may, however, be required to ensure that problems uncovered through audits, and which are not the consequence of negligence or intent to violate a law, are not cause for fines and other penalties. A number of states now have such audit protection laws.

⁵⁴ Mike Vivoli, "Putting People Last," *CEI Update*, November 1992, pp. 1, 3.

⁵⁵ *Environmental Quality*, 15th Annual Report of the Council on Environmental Quality (Washington, DC: U.S. Government Printing Office, 1985).

⁵⁶ Lippke, "Incentives for Managing Landscapes to Meet Non-Timber Goals."

⁵⁷ See, for example, James M. Holway and Raymond J. Burby, "The Effects of Flood Plain Development Controls on Residential Land Values," *Land Economics*, August 1990; and Holway and Burby, "Reducing Flood Losses: Local Planning and Land-use Controls," *Journal of the American Planning Association*, March 22, 1993.

⁵⁸ As Scott Bush of the National Environmental Policy Institute notes, this would "allow facilities to use an appropriate mix of emission, effluent, and source reduction (pollution prevention) technologies and techniques to meet the environmental goals." See draft "Consensus Objectives," Unified/Organic Statute Sector, Reinventing EPA & Environmental Policy Working Group, National Environmental Policy Institute, Washington, DC.

About the Author

Lynn Scarlett is Vice President of Research at the Reason Foundation, a nonprofit public policy think tank based in Los Angeles, California. She has written extensively on environmental policy issues, including an award-winning article on recycling costs that appeared in *Solid Waste and Power* magazine.

Ms. Scarlett was appointed in 1994 by Governor Pete Wilson to chair California's Inspection and Maintenance Review Committee, which evaluates and makes policy recommendations regarding vehicle smog inspection programs. Ms. Scarlett also chairs the "How Clean Is Clean" Working Group of the Washington, D.C.-based National Environmental Policy Institute. She served as a technical adviser to the Solid Waste Association of North America's Integrated Waste Management Project. She also served as an adviser to the Houghton Mifflin "Encyclopedia of the Environment" project, to which she contributed the entry on "source reduction." She is now serving as a member of "Enterprise for the Environment," a task force on environmental reform opportunities chaired by former EPA Administrator William Ruckelshaus.

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The NCPA is the source of numerous discoveries that have been reported in the national news. According to NCPA reports:

- Blacks and other minorities are severely disadvantaged under Social Security, Medicare and other age-based entitlement programs;
- Special taxes on the elderly have destroyed the value of tax-deferred savings (IRAs, employee pensions, etc.) for a large portion of young workers; and
- Man-made food additives, pesticides and airborne pollutants are much less of a health risk than carcinogens that exist naturally in our environment.

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