

A FREE-MARKET ENVIRONMENTAL PROGRAM

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The Failure of Political Management

The Soviet Union should not adopt the U.S. approach to protecting the environment. The fact that the United States has a superior environment has far less to do with our Environmental Protection Agency than with our free-market economy. Moreover, the "market failure" thinking implicit in most EPA policies logically implies acceptance of an ecological variant of central planning. As a nation that is only now beginning to escape one long experiment of this type, the Soviet peoples should be careful before beginning another. Not only are the specifics of the American model poorly suited to the Soviet system, but, additionally, the U.S. environmental effort is only some 20 years old; only in the last few years has it received any serious critical attention. That review effort has already suggested major problems with current policy. The Soviet Union faces many economic and environmental problems. A Soviet EPA similar to that in America and given similar powers might well cripple any effort to gain economically. Moreover, there is no guarantee that it would advance environmental values.

Capitalism, Not Political Regulation, Is the First Step

The United States has a superior environment in large part because we have a superior economy. Capitalism demands greater efficiency in the use of energy and material and thus reduces the stress on the environment. Under capitalism, property ownership is more widespread and is more likely to be protected. Capitalism permits people to create wealth and that wealth makes it possible to spend more on environmental issues.

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In the United States, those parts of the economy that are under political control—the highways and airways, many municipal services, national forests—are managed inefficiently and incur large economic and environmental losses. Soil erosion is a small problem in the United States because erosion lowers farming productivity and thus reduces land values. However, erosion is increased by programs that pay farmers to take land out of production and encourage them to farm more intensely that fraction of land kept in production. Moreover, U.S. farm subsidies (an obvious violation of free-market principles) have encouraged the draining of swamps throughout America, destroying ecologically important wetlands. The result is not dissimilar to the diversions of water from the Amu Darya and Syr Darya, which threaten the survival of the Aral Sea.

The Risks of Ecological Central Planning

Consider again the logic of the "market failure" explanation for environmental problems. As generally told, the story goes something like this: Markets are powerful institutions and do many things well. However, markets ignore critical factors such as pollution. Markets fail to produce adequate quantities of "public goods" and they are short-sighted, failing to consider future generations. Since markets fail to address these concerns, political intervention is necessary to correct such "market failures." Fortunately, such intervention is needed only for those parts of the economy having environmental impacts.

There are several problems with this logic. First, the fact that markets "fail" does not, of course, mean that political action will succeed. One must compare the strengths and weaknesses of market versus political approaches before selecting one approach over another. Whereas markets are sometimes less than perfect, the political process is typically a disaster.

Even more important, however, is the fact that the "market failure" model is open-ended. It creates excessive demands on the limited abilities of the political process. It suggests that any economic decision having environmental impacts be regulated. Since, however, every economic decision has some environmental effect, the result is an effort to regulate the whole world. Having rejected central planning for the economy, the United States is now poised to accept central planning for the ecology, an infinitely more difficult task.

Central planning does not work—a lesson that people in the Soviet Union perhaps understand better than people in the United States. Arguments to that effect go back to the 1930s. A political agency lacks the detailed information necessary for proper management and finds

it difficult to motivate any large fraction of the population to respond to such information as it does possess. These problems of socialism have been empirically and tragically confirmed in recent years. Those concerned with environmental quality should, therefore, reconsider the wisdom of any paradigm that requires such cumbersome political controls.

To be successful, a politicized environmental policy must find some way of setting priorities and of maintaining consistent programs over time. Just as the market continuously decides whether society's interests are best advanced by producing more bread or coal or motion pictures, so also, environmental planners must somehow decide whether more resources should be devoted to reducing nitrogen oxides or expanding elephant populations or picking up litter. But experience teaches us that agencies do not find it easy to set priorities, maintain a program over time, or even allow experimentation.

The U.S. Model Does Not Travel Well

Another reason for rejecting the U.S. model is its inapplicability to the Soviet Union. The American program has involved the expenditure of hundreds of billions of dollars, has relied on a technology-fix approach employing armies of highly trained technicians (both in government and the private sector), has relied on a bureaucracy largely immune to bribery, and has been pushed by an aggressive and independent environmental advocacy movement. While this program has realized some gains, few would argue that the process has been cost effective. The Soviet Union faces many economic problems and cannot waste money in such a fashion. It needs to employ skilled workers in rebuilding the economy, not in designing and maintaining annual improvements in coal-scrubbing technology. Indeed, economic growth is a vital prerequisite to any environmental improvement and that goal must be given priority.

Await the Results of the Reversed Effort Now Under Way

Finally, the U.S. Environmental Protection Agency is now receiving substantial criticism from both liberals and conservatives. The findings are in general agreement: EPA has sought to do too much and, therefore, has done little well. EPA operates within a political sphere and thus sets priorities to reflect perceptions rather than realities. The result is an emphasis on the sensational rather than on the serious environmental problems. The institutional framework within which EPA operates is not receptive to either scientific or

economic information, making it very difficult for rational policies to be formulated and implemented.

The EPA has grown into a large and very powerful agency by portraying itself as a public health agency. In reality, the health benefits conveyed by EPA are minimal. Indeed, by raising public concerns over low-level risks and by slowing down the rate of technology change, EPA may well endanger public health. Economic growth and technological development in the Soviet Union have been a political matter for many decades. Suspicion that the risks of such technologies may have been understated seems widespread. To move from a system where information has been suppressed to one that would emphasize every risk associated with technical change would further weaken the prospects for economic and technical growth in the new Soviet Union.

In the Soviet Union, the emphasis on political development has made Soviet citizens suspicious of all change. But where such agencies have been important in the United States—the Corps of Engineers, the Atomic Energy Commission, the Bureau of Reclamation, the Federal Highway Administration—the same type of suspicions have resulted. Fortunately, most economic and technical change in the United States has remained in the private sector where it is better managed. The need to cover costs ensures that projects make economic sense and that liability laws limit environmental and other risks.¹

However, in the United States such developmental agencies have become less important in the last several decades. Instead, their regulatory sister agencies (the EPA, the Food and Drug Administration, the Federal Trade Commission, the Occupational Safety and Health Administration) that act as gatekeepers, deciding whether a new technology or project goes forward, have become far more important. The bias of such agencies is to retard socially beneficial change. This bias is due to the different incentives of these two types of agencies rather than to the individuals involved. The bureaucrat who gladly assumes developmental risks in one agency can become fanatical about the smallest risks, if transferred to a safety agency.

In brief, the American EPA is not a viable model for the Soviet Union. Rather than adopting this failed strategy, the Soviet peoples

¹American liability laws are presently in turmoil and similarly provide no good model for the Soviet Union. As later discussed, liability laws should act to clarify property rights and restrict environmental and other trespass. Voluntary (contractual) arrangements permitting the use of one's property would be invoked to resolve "pollution" problems.

can and should chart an independent course along the free-market environmental lines developed in the next section.

The Case for Free-Market Environmentalism

Rather than Markets Failing, Failing to Allow Markets

The case for market failure seems obvious to many: How can markets address such complex problems as water and air pollution? However, U.S. history suggests an ability to do exactly that. Early in U.S. history, landowners sometimes built dams that flooded upstream users. That flooding, an early form of pollution, was treated as a trespass and the dam builder was forced to lower the dam.² Similarly, early steam locomotives spewed forth not only smoke but also sparks. Those sparks sometimes ignited grain fields near the rail tracks. Again, that action was treated as trespass and the railroad was held responsible for damages. Soon, however, the courts shifted (see Horwitz, 1977). If property were protected in such ways, the theory suggested, an insurmountable barrier would be created to economic growth and technological change. The "common good" rested on rapid development; thus, the "small" harm to the private landholder was outweighed by the greater overall good to society. This court-driven, utilitarian weakening of property law not only allowed developers to pollute with impunity; it also changed the rules of the game, so that certain participants were allowed to damage the property of others. In such circumstances, to blame the market system for anti-market court decisions is misleading.

The history of the Soviet Union also illustrates the strength of this utilitarian force. In September 1921, Lenin signed a decree entitled "On the Protection of Monuments of Nature, Gardens, and Parks." That decree prohibited any development of natural resources in *zapovedniki* (national parks). The ecological view that environmental amenities should be valued in their own right was popular. In principle, environmentalists would guide and restrain economic growth. In practice, environmental concerns were never well integrated into the Soviet economy. As these guidelines began to conflict with the economic priorities of the Five-Year Plans, the utilitarian view that saw resources solely as raw material for economic growth came to the fore. Only Lenin's personal interest prevented total control by the development-at-any-cost forces. Once the Stalinists came into power in the late 1920s, the utilitarian position became dominant.

²This case is discussed in Smith (1982) and Dilorenzo (1989).

Thus, as the Soviet Union reestablishes the concept of private property, it should return to its own earlier preutilitarian tradition. Only if businesses bear the costs of pollution directly are they likely to respond. In a world where property rights were honored, some sectors might grow more slowly and decisions about location, production, and distribution would change. Most important, incentives would exist for innovations that would reduce pollution. The inclusion of environmental values in the private property regime would yield a different path for economic development, one that would be more sensitive to environmental values. The ingenuity of the nascent Soviet entrepreneur would be harnessed to solve both economic and environmental problems simultaneously.

Although in the United States the first blow against the protection of property rights from pollution was judicial, the legislature soon joined the battle. During the late 19th century, American intellectuals became enamored with the progressive statist policies of Bismarck's Germany. The view that resources were best protected through political action became dominant. America departed from its British antecedents and made all native wildlife the property of the state. However, it was only toward the end of the 19th century that this policy began to dominate the political agenda. The first results were the creation of the national parks and national forests around the turn of the century. Private property, the experts believed, was too likely to be used for narrow special interest purposes; only enlightened management by well-trained public "servants" could ensure that the public interest would be advanced.³

In this century, the growing belief in the superiority of political control of resources has led to increasing nationalization throughout the United States. Over one-third of our land is now politically controlled. Only the Soviet Union, China, and a few other nations have a larger share of their land base in the public domain. And only the United States seems to be moving toward increased nationalization. Not only land but other valued resources such as the electromagnetic spectrum became federal property under this collectivist paradigm. With so much of the nation governed in such a fashion, one should not be surprised to find that environmental (and economic) values have done badly. Again, the mismanagement of the public domain reflects more a failure to allow markets than any market failure.

Not only does the federal government own many of America's environmental resources, it also directly competes with—and thus

suppresses—private options. Water supplies, sewage treatment plants, solid waste management services, timber management, recreation—all are areas where the federal government directly competes with private enterprise. Political suppliers of goods and services enjoy certain advantages over private sector alternatives. Political efforts often outlaw or restrict competing private operations. Such public sector monopolies have reduced market experimentation and resulted in few creative solutions to our environmental problems.

Finally, the ability of U.S. markets to resolve environmental issues has been massively curtailed in recent years by the growth of the regulatory state. Today, many of the creative cooperative management arrangements might be ruled illegal under the antitrust regulatory laws. After all, conservation implies reducing output today to ensure a more sustained supply over time. Supply management, however, is suspect under the antitrust laws. In fact, efforts by Gulf Coast shrimpers to moderate their catch and thus conserve this valuable resource were enjoined by the U.S. federal antitrust authorities.⁴ Other federal laws such as the Endangered Species Act, for example, make it very difficult for environmental entrepreneurs to expand the supply of rare animals. On the basis of a logic akin to that behind the antitrust policy affecting elephants, U.S. environmentalists drove out endangered species (Simmons 1989). Ideology proved more important than survival.

In summary, although the United States remains in many ways a free-market economy, massive changes have occurred over the last century that greatly impede any private responses to environmental problems. Trepass laws were weakened, making it harder for private parties to protect properties from pollution and reducing the incentives to develop pollution-reducing technologies. Politically controlled property is a dominant feature of the United States; government lands are managed poorly from both an environmental and an economic perspective. State run (and tax-subsidized) waste management enterprises have limited the ability of private firms to address environmental issues. Regulations restricting cooperative arrangements and property use have also weakened the robustness of the marketplace in the environmental area. In the face of these antitrust policies, we must reconsider the market failure thesis. Moreover, markets and other voluntary arrangements already play an important environmental protection role—a role that has received insufficient attention.

³The resulting political mismanagement of parks and forests has received considerable attention in recent years. For example, see Chase (1986) and O'Toole (1988).

⁴For a complete discussion of private alternatives to political management of the ocean, see Jefferys (1991).

Markets Already Protect Environmental Values

Some within the environmental community would agree that the political system does not work well. But they doubt whether private property approaches work better. Before considering free-market environmentalism, they demand evidence that a property rights approach can, in fact, advance the full state of environmental goals. Provide evidence that markets might better protect the elephant, for example, and the discussion switches to the problem of groundwater contamination. Demonstrate that groundwater might better be protected by "unitization,"⁵ and environmentalists raise questions about hazardous wastes. Discuss the possibility that hazardous wastes might better be addressed by "private adoption,"⁶ and one is tossed the ultimate problem, the dreaded greenhouse catastrophe.⁷ For such reasons, it is necessary to discuss in at least some detail the total complex of environmental issues.

That work, unfortunately, has only just begun. Since the dawn of the modern environmental era, there has been no serious attempt to apply the property rights approach in the United States. Most other nations have followed this lead. While thousands of analysts labor to advance political solutions to environmental problems, only a handful of free-market environmentalists yet exist. There is a rich literature on the ways in which various societies have addressed environmental issues,⁸ but that research has not yet been applied to modern environmental problems. Most of the research that has been done in this area reviews the record of government agencies acting as resource managers (Studies of the U.S. Forest Service, the Bureau of Land Management, the Corps of Engineers, and the World Bank). That work demonstrates that political agencies have a weak environmental record but does nothing to demonstrate that private management would yield a superior outcome.⁹

⁵This common method is utilized for management of oil deposits (discussed later in the paper).

⁶The idea of adopting a hazardous waste site in return for reduced pollution fees. This idea is currently being explored by Richard Stroup of the Political Economy Research Center.

⁷Global issues are among the most difficult of all possible concerns for free-market groups. However, this difficulty does not suggest that socialist solutions would prove superior. An initial suggestion of how to address this issue is discussed later in the paper.

⁸The cultural anthropological literature on this point is quite illuminating. See, for example, McCay and Adelson (1987) and Cordell (1990).

⁹The creativity of private parties in advancing environmental goals has been described in a valuable report contained in *Environmental Quality* (1984), chap. 3.

FREE-MARKET ENVIRONMENTALISM

An excellent example of how private property better reconciles environmental and economic values is the Rainey Wildlife Refuge. This refuge, owned by a major environmental group, is located in the midst of vast natural gas and oil fields. Since the refuge was privately owned, development was at the discretion of the environmental group, the National Audubon Society. That "purist" attitude, however, would have lost the royalty payments of a producing well. The Society elected to permit drilling under careful guidelines to reduce environmental damage. Economic and environmental gains to all resulted. In contrast, the Audubon Society, along with most other U.S. environmental organizations, vigorously opposes any energy development in the politically controlled Arctic National Wildlife Refuge. Absent a property stake in rational development, there is little reason to be rational.

In a world of private property, unpopular values can be protected. In the political world, a resource can be protected only if it garners sufficient support, generally a majority of the population. The extent of environmental values at risk in the modern world is vast. There are only some 150 governments, many of which now find it hard to protect their citizenry. There are, however, over 5 billion people on this globe. Only if the collective instincts of these peoples—their interests, skills, and wealth—are enlisted in the environmental cause is any appreciable fraction of the biosphere likely to receive adequate protection.

The challenge then is not to restrict markets, to segregate the world economy, but rather to integrate the ecology and the economy. Only if market forces and private property are extended throughout the world will society gain the ability to save nature. Ocean reefs in the South Pacific, Andean mountain tops, elephants in Africa, the shoreline of Lake Baikal—all deserve protection as the private property of some group or individual.

A fishing club, the Pride of Derby, demonstrates how property rights can prevent stream pollution. In England, clubs own the right to fish along some rivers and thus are quick to respond to pollution threats. An upstream municipal polluter argued that its interests outweighed those of the club. Since the fishery was threatened, the club went to court and prevailed. This ability of private parties to restrain municipal polluters in the United States is limited. Under the Clean Water Act, political polluters are treated preferentially. First, their clean-up goals are less stringent; second, they face far more lenient clean-up schedules. To politicians, the source of the pollution is as significant as the pollution itself. Politically preferred

polluters are treated more leniently than are pariah polluters. Yet, to the river and the fish, pollution is pollution.

Free-market environmentalists see the ability to better enforce the polluter-pays principle as a key element in the environmental movement. Ownership of a pollution-sensitive species can ensure protection of the larger environmental value. By protecting privately owned fishing spots from pollution, the owners protect not only their portion of the river but also downstream areas. Similar ownership rights in oyster or shellfish beds might protect larger lakes and bays. Moreover, these examples suggest that even when one cannot readily envision any way of protecting the total bay or river, partial ownership rights might suffice. Even if only upstream or shoreline areas are privatized, the whole region may be protected.

Groundwater has become one of the more important environmental resources. Over half of all drinking water is now derived from such sources, and there is growing concern that improper management of this resource may lead to excessive depletion and contamination. Free marketeers note that similar problems are solved routinely in the oil industry. Like an aquifer, an oil pool is an underground liquid resource subject to depletion and quality deterioration. To address this problem, the oil industry has developed a property rights restructuring program called "unitization," which entails the assignment of all individual ownership rights to a new entity (the "unit"). The unit manager then operates the field in an integrated fashion for the duration of production. Each owner receives a share of the income of the pool. Unitization illustrates the restructuring of already existing property rights to allow more efficient management. Such reassignments of rights can be an important privatization strategy. With the Soviet Union struggling to modernize its oil industry, private property rights and unitization offer new opportunities for improvement.¹⁰ Unitization is not always easy. Still, it has been used successfully by the oil industry for many years. As groundwater becomes more valuable, the unitization approach might well be extended to permit private management of groundwater supplies. This example illustrates again the principle that privately owned resources are more likely to be used wisely (Fractor 1982).

Politics or Property Rights: There Is No Third Way

Many would agree that command-and-control regulatory approaches are too costly, but would still reject a property rights

¹⁰Note that some oil fields are so large that it becomes very difficult, and costly, to reach agreement on a single unit. Nevertheless, this obstacle has been overcome through the development of water-wall "fences" that subdivide the pool into separate units.

approach. For example, Robert Stavins (1989, p. 96), director for the recent *Project 88* reports, states:

Does anyone really believe that acid rain can be efficiently controlled by assigning private property rights for U.S. airshed and then effecting negotiations among all affected parties? Economic-incentive mechanisms, on the other hand, avoid the impracticalities of the pure, private property approach, while retaining the merits of decentralized, market-driven policies.

This statement follows a long tradition of well-respected economists who argue that when markets "fail," political intervention is indeed necessary, but that one need not rely on command-and-control regulation. Rather, one can emulate the role that markets would perform were they available and set the quantity or price of the targeted factor at the appropriate level.

In the environmental area, this "third way" would rely on politically determined pollution taxes and emission rights. Politics will continue to set the output targets, but "market-oriented" policies will get us there. Such approaches have long been championed by economists, but have now received some support from mainstream environmental groups.¹¹ Unfortunately, such measures are not more likely to prove effective than the more direct political methods they replace. Nor are such approaches really new. In the economic sphere, they were widely championed under the "market socialism" label in the 1930s. Socialist economists had begun to recognize the practical problems of managing a modern economy and advanced this approach as a way of approximating the efficiency advantages of capitalism, while still retaining political control. In the Soviet Union, one advocate of this approach was Evsei Liberman although his efforts are now largely forgotten.¹²

The reasons why market socialism did not work are much the same as those explaining the failure of command socialism and were well explored in the socialist calculation debate of the 1930s between Oskar Lange, the brilliant socialist economist, and Ludwig von Mises and F. A. Hayek, equally brilliant free-market economists. Both sides agreed that a command economy would fail. Lange, however, argued that efficiency could still be attained via a computed system of incentive prices and/or tradeable production quotas. Hayek argued that

¹¹For example, the "market-oriented" policies outlined in *Project 88* (1988, 1990) received the endorsement of the Environmental Defense Fund.

¹²Liberman, who worked at the Kharkov Engineering and Economics Institute, outlined "market-socialist" reforms in the September 9, 1962, issue of *Pravda*. His program called for the evaluation of economic performance on the basis of profitability of the particular enterprise.

this was impossible, that absent the voluntary exchanges defining the market, the information needed to calculate price and quantity would not exist. In effect, the absence of a market also means that one cannot replicate a market.¹⁴ Intellectually, most agree that the Austrians won the debate. Even Paul Samuelson acknowledged as much: "It was Hayek, with his point about how the market system brings information to bear upon the outcome, who really won the debate."¹⁴ Politically, however, Lange won and the world was forced to endure another half century of socialist miscalculation.

Some advocating this "third way" (Stavins falls into this camp) agree that the more important question for society is not how to do something but rather what is to be done. Since there is no immediate prospect (in the United States, at least) for eliminating political control over environmental questions, we should at least seek to moderate the costs of such interventions. However, such arguments ignore the fact that adopting more effective means of attaining inefficient goals does not make for efficiency. Indeed, such schemes may delay the date when serious reforms will be possible.

Moreover, even on its own terms, the U.S. experience with "market-oriented" environmental tools—bubbles, netting, off-sets—has been of very limited value.¹⁵ Markets in emission rights have long existed but have never flourished. The political realities that make it hard to set standards also make it hard to regulate via market mechanisms. The regulators have defined such markets extremely narrowly and have moved to further restrict them whenever it appeared that they might become popular.¹⁶ Moreover, regulators have ignored the market's need for clarity and stability. Even worse, environmental officials have seen no problem in simply expropriating such emission trading rights, thereby destroying the incentives to lower emissions in the first place. Private parties are unlikely to take seriously property rights that depend on the vagaries of politics.

Free-Market Environmental Policy for the Soviet Union

This last section of the paper outlines a Soviet free-market environmental program. Since the Soviet Union's most important environ-

¹⁴This debate is discussed in Lavoie (1985).

¹⁴Cited in Franke (1985, p. 222).

¹⁶The literature on this subject often acknowledges that such policies rarely work as intended. The major enthusiasm for this work comes from economists desperately eager to play a more significant role in environmental policy and environmental groups seeking to gain the support of conservatives. In addition to *Project 85* (1988, 1990), see Tichenberg (1985) for a good example.

¹⁷There has of yet been no detailed review of governmental created markets, but there

mental goal should be to improve the efficiency of material and energy use, and since such efficiency is possible only within a free-market economy, the first objective must be to privatize the Soviet economy as rapidly as possible. Moreover, only such a first step will make possible the wealth required to clean up the environment. The second step should be to extend property rights to those environmental resources now at risk, to privatize the ecology. Indeed, these steps should be taken simultaneously to ensure that economic development proceeds along paths more compatible with ecological protection.

Both of these steps are difficult. In each case, knowledge is lacking on exactly what actions are most appropriate, there is serious opposition from vested interests, and societal inertia must be overcome. There is one major advantage in the Soviet economic privatization program: The program can be guided by observing the economics of the United States and the other relatively capitalist countries.

However, the Soviet Union faces much greater difficulties in seeking to privatize the ecology. While, as noted earlier, there are numerous examples of how property rights already play an important role in Western environmental protection, there is no obvious role model for this novel approach. No nation has yet sought to integrate its ecology and its economy along free-market lines. This section discusses how this process might begin with wildlife, streams and lakes, and airsheds. The Soviet Union does enjoy one major advantage in this reform effort. Its history ensures that the Soviet peoples be slow to accept the central planning approach inherent in the "market failure" paradigm. Moreover, Soviet society has not yet been captured by a Green Nomenklatura eager to save Nature from Man—at any cost.

Privatizing the Economy

Privatization refers to the transfer of an enterprise or resource from the state to a private party. There now exists a substantial literature on this topic.¹⁷ Others have discussed this traditional privatization process. Their advice is mine—the Soviet Union should privatize its economy as quickly as possible. Speed is far more important than ensuring that the resource goes to the "right" group or is sold at the "correct" price.

The Soviet Union should reinforce this privatization effort by reforming its legal system to reduce its existing utilitarian bias.

are obvious examples that illustrate the problem: taxicab medallions in New York City and airline slots at congested airports.

¹⁷Two good examples are Butler (1987) and Fitzgerald (1988).

Private property means little if it can be seized or expropriated whenever a plausible claim can be made that such actions will advance the "public good." This utilitarian bias in the law has greatly weakened private property defenses in the United States, the consequences of which are only now being seen. The Soviet Union has the opportunity to adopt a rule of law that makes each individual party responsible for the full costs of any damages his or her action imposes on others—that is, to enshrine the polluter-pays principle into law.

Privatizing the Ecology

As noted, there is little precedent for privatizing the vast array of environmental resources that humans have come to value. Nonetheless, there are a few important initial principles. The first concerns the value of an "adoption" statute that would encourage the transfer of environmental resources to private hands. The Zimbabwean law that made it possible for tribal and other groups to petition the state for control over the local wildlife provides one model. The logic of an adoption approach is obvious: Why should the government expend scarce resources to protect a resource that has defenders in the private sector? Hunting clubs, for example, might be granted property rights to a specific forest; a fishing club might receive rights to the fishing along a specific stretch of the river. Such "parent" organizations would have every incentive to protect these resources and to develop innovative ways of making them more valuable.

The second principle is that environmental issues should be resolved locally whenever possible. Uniform national rules devote too much effort to controlling emissions, resulting in little pollution and too few resources on those rarer, but more serious, problems. Local groups should be empowered to resolve local environmental disputes. Each region should be free to make its own decisions on the appropriate tradeoff between environmental and economic matters.

The third principle emphasizes efforts to simplify the task of determining which polluters are damaging which regions of the country. A property rights-oriented approach would emphasize the need to unravel the complex sequence of events that relate economic activities in one place to environmental damage in another.

The fourth feature of a program to privatize environmental resources concerns the need to improve fencing and trespass enforcement technology. One example—barbed wire fences separating cattle—is indicative of the innovations needed. "Beepers" or implants that would signal the location of larger wildlife (manatees, whales,

Siberian tigers) might well have value.¹⁸ Technologies also exist making it possible to determine the quantity and types of air pollution entering a region. Lasimetries, for example, is a technology that can map atmospheric chemical concentrations from orbit. In time, that science might provide a sophisticated means of tracking transnational pollution flows. Note that most nations do participate in "labeling" high explosives manufactured in their countries as part of a worldwide anti-terrorist program.

A primary objective should be to keep things from getting worse, to maintain environmental quality in those areas now in good shape. An approach to that goal would be to encourage hunting and fishing clubs or shellfish or commercial fishing cooperatives to seek title over stretches of forests, rivers, and bays. These groups, like the fishing club discussed earlier in the Pride of Derby example, should be granted full property rights for these purposes and the right to protect their property in the courts. The objective is to place "trip-wires" around the boundaries of areas now pristine to better ensure that they remain so over time.

Much of the Soviet Union is heavily polluted, untreated wastes from many factories and municipalities have already rendered long stretches of rivers and many industrial regions temporarily valueless. In areas badly damaged by air pollution, we might again assign all undeveloped land in the polluted region jointly to the culprit enterprises. The firm would find the value of its newly acquired land varying with its decisions regarding pollution levels. The entrepreneur firm would find it possible now to make money by upgrading the quality of its holding by reducing pollution. Note also that such incentives depend on the enterprise being in *private* hands; again the first step is to privatize the economy. Contractual obligations enforceable in court would be necessary to prevent firms from selling the land and then returning to their old habits. Moreover, the sales contract might require the firm to add a tracer to its outflow in order to ensure that it continues clean operations.

Urban air pollution control poses one of the most difficult problems to free-market advocates. Conceptually, one can envision ownership of airsheds; practically, there is little understanding of how such properties might be "fenced" or how "trespass" might be detected and prevented. Such problems have led most environmentalists to accept political airshed management. Note, however, that these

¹⁸The technologies used to protect against shoplifting are suggestive of what is needed, that is, the ability to unobtrusively tag property (in this case, plants or wildlife) in ways that reduce the likelihood of that property being stolen (poached).

technical difficulties are not made easier by resort to political action. Nor has the performance of the U.S. Environmental Protection Agency in this area been brilliant. Still, a property rights scheme suggests reform efforts.

One such approach would involve the use of automobile emissions charges. The municipalities in which pollution is a problem could test the car to determine its emission profile. This profile could be based on emissions per kilometer, and a windshield or bumper sticker (a red, yellow, or green circle, for example) indicating the emission class of that car could be required. The car's mileage will be recorded and the owner will pay an annual fee based on the miles driven in that pollution class. Since, however, the data suggest that much of the problem occurs because cars for various reasons fall out of tune, there should also be monitoring sites throughout the city (some mobile to catch evaders) to detect any car emitting outside its pollution classification. Violators would pay a fine and move to a higher annual fee category.

This program would encourage owners to maintain their cars more carefully. Moreover, emission performance would become one of the features sought when one bought an auto. If one were driving outside the cities, this feature would not be important; if one were driving solely in cities, one might purchase a tightly controlled vehicle.¹⁹

The most difficult environmental issues are global, such as the alleged greenhouse warming and ozone depletion. Whether these problems are real or ephemeral is unclear. For many years into the future, the evidence will be ambiguous. Reality, however, is unlikely to make much difference to the policy debate. Despite the evidence to the contrary, many people are convinced that warming, that such changes will have disastrous consequences, and that urgent global political action is needed to save Mother Earth. The major risk today is less global warming than the risks that politicians might adopt anti-growth, anti-energy policies. Support for such apocalyptic policies owes much to quasi-religious environmental groups, government agencies seeking power through greater political control over the economy, and scientists seeking funding.

A new layer of global regulation would be foolish. There is no reason to adopt solutions that will not work—and there is no prospect that international bureaucracies will prove even as reliable as their

¹⁹This approach is discussed as an alternative to government subsidization of various gasoline-alternative vehicles in Woodlief (1989), and there is a general discussion of this approach in Smith (1989).

national counterparts. Current advocates are pushing for an international treaty to reduce greenhouse emissions enforced by a tax on all carbon use. A warming phenomenon, in contrast, would benefit some nations, possibly harm others. Why the Soviet Union or Canada would wish to prevent a trend that might lessen the severity of the infamous Russian winter is baffling. Moreover, a tax designed to reduce energy use could do much to weaken the world economy. The data suggest that, while the putative dangers associated with the buildup in carbon dioxide remain undemonstrated, the benefits on agricultural productivity of this carbon dioxide buildup are real and positive.

A free-market approach would consider how property rights might be extended to the atmosphere and how the atmosphere might be protected under the relatively weak rules of international property and liability law. International private law has gradually evolved to allow damage claims against foreign tort-feasors. Case studies are needed of commercial liability treaties dealing with airlines, oil spills, and satellite disasters to determine the extent to which such treaties might be applied to environmental concerns.

Prevention, however, is not the only response to the greenhouse effect. Given the uncertainties inherent in this area, the possibility that this effect might even prove beneficial, and the difficulty in preventing a warming (were it valid), it would be wise to adopt a policy of resilience rather than avoidance. After all, the Earth has survived much warmer periods, and even substantial efforts are only likely to delay rather than prevent these changes. Rather than spend billions of dollars that might at best delay inevitable changes, a better move would be to deregulate and privatize the economies of the world, reduce the barriers to wealth creation, and thereby make the world more prosperous. Greater wealth would make possible many measures that would make climate change less onerous in any event.

Conclusion

Environmental values are important and should be taken seriously. The question is whether environmental amenities will be considered to be as important as food, clothing, and housing—and thus become integrated into the private economy—or whether they will be viewed as a special category to be produced politically. The Soviet Union can choose a path different from that chosen by the United States.

During the last year, the world was shown dramatic scenes of environmental and economic disasters: dying elephants in Africa, and dying economies throughout the Communist bloc. The causes

of these disasters were similar: Both the African ecology and the East Bloc economies had been excluded from the world economy. The failures of economic central planning have finally forced reform in the Eastern Bloc. Formerly Communist economies are rapidly being integrated into the world economy. The failures of ecological central planning have not yet triggered similar reforms in the environmental area, but there is hope that the arguments favoring the integration of African wildlife into the world marketplace will eventually prevail.

Both economic and environmental reform are essential. In both cases, the failure to allow the individual to play a positive role has been the core problem. In both cases, no steps were taken to empower people to engage their full energies in the solution of societal problems. The Soviet Union seems poised to enlist those energies in the economic sphere; it also should do so in the environmental field. Free markets provide the means to improve both economically and ecologically. Whether to utilize them or not is the next critical choice for the peoples of the Soviet Union.

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