

# ENVIRONMENTAL POLICY AND NATURAL-RESOURCE-BASED ECONOMIC DEVELOPMENT

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Environmental policy is designed to restrict and channel our uses of the environment in ways that protect environmental quality. As such, environmental policies often conflict with resource development when that development requires the use of environmental assets. It is artificial, though, to look solely at the effects of environmental policies on resource development. There are also important natural resource and other (such as tax) policies that, in some cases, encourage resource development and, in other cases, help conserve or preserve those resources. The net policy impact on resource development depends on the net effects of incentives and disincentives provided by environmental and natural resource policies.

## **Natural-Resource-Based Economic Development**

First, it is important to define natural resource development. Is development defined as extraction and use as in the case of fossil fuels? Is development harvest and sale of a resource such as fish or timber? Or is development the preservation of a unique natural area like Yosemite National Park that annually attracts millions of visitors and makes a large contribution to the regional and national economies? The latter case would normally be called preservation, not development. However, if our criterion is economic development that is based on natural resources, the preservation of Yosemite is clearly one form of economic development of the resource that can be compared to other forms of economic development, such as harvest of the timber in the valley or use of the valley floor for cattle grazing.

The traditional classification of natural resources into exhaustible and renewable may help in understanding the meaning of development. Exhaustible resources include fossil fuels and minerals. The fundamental characteristic of an exhaustible resource is that its supply is fixed in the physical sense at any point in time, and new supplies cannot be created. Exhaustible resources can be further characterized by whether they are recyclable. Fossil fuels are used up when they are burned, but many of the products of fossil fuels, such as lubricating oils, can be partially recycled. Many minerals may also be partially recycled. While exhaustible resources are fixed

in physical supply, economic supply depends on market price and technology.

Renewable resources are perhaps more important to the future economic development of most regions. Like exhaustible resources, renewable resources have a fixed supply at any point in time. The difference is that if renewable resources are used in a sustainable fashion, they will replenish their supply. Current use, then, does not necessarily reduce future supply.

Some resources may be renewable for certain uses and exhaustible for others. This is particularly the case if some uses of the resource cause irreversible damages. Hiking in a forest is a renewable use of the forest as long as hiking pressure does not lead to gullying of the trail and consequent irreversible damage. However, off-road vehicle use on wetlands can and does cause irreparable damage to the wetland ecology and is incompatible with other uses such as hiking or provision of wildlife habitat.

Finally, a given use of natural resources may be considered as renewable by some people and as destructive by others. Limited logging of old-growth forests may be seen as a way to increase the timber growth and production while still preserving the forest (Sedjo). Others regard such logging as utterly incompatible with the ecological, scenic and, indeed, ethical values provided by old-growth forests.

### **Natural Resource and Environmental Policies**

The policy debate over environmental and resource issues has broadened over time. Environmental policies are no longer solitary issues to be dealt with separately from development policies. Environmental policy is at the center of many of our most important social debates. Second, everything is related to everything else. Increased water quality restrictions may hurt one industry but increase recreation and tourism. All environmental policy decisions involve difficult tradeoffs.

### **Environmental Policy and Economic Development**

A number of studies have attempted to gauge the overall impact of environmental regulations on the U.S. economy. Portney summarizes those studies as finding “. . . pollution control spending had a relatively minor impact on macroeconomic performance. It has exacerbated inflation somewhat and slowed the growth rate of productivity and the GNP. On the other hand, studies have found that pollution control spending appears to have provided some very modest stimulus to employment . . .” (p. 11). This is somewhat surprising, given that the Environmental Protection Agency (EPA) estimated total private spending to comply with environmental regulations from 1981 to 1990 to be \$640 billion (Portney).

While studies have found that environmental policies have not had a major impact on economic growth in the aggregate economy, that is not necessarily the case when you look at specific sectors, particularly the natural resource sectors, such as mining, forestry, fisheries and recreation.

## **Mining**

The story for mining is perhaps the simplest of the four natural resource industries. While mining is a complex industry geographically, the products produced by mining tend to be purely market goods that have value only in their use. Few people would plan their vacations around visits to pristine iron ore deposits as they might to visit a redwood forest. The policy complications for mining involve externalities that are created during the mining process, such as destruction of the landscape, air and water pollution, and environmental problems associated with processing and use. The social and policy choice for mining is to balance the economic value of the product, including the regional economic contributions made by extraction and use, with the environmental costs of extraction and use.

As an example of the policy trade-offs involved in mining, the Clean Air Act of 1990 has significantly strengthened regulation of emissions of sulfur dioxide to reduce acid precipitation. Because coal supplies approximately 40 to 70 percent of man-made sources of sulfur dioxide (James) the coal industry will be affected by the legislation.

The Clean Air Act of 1990 promises to reduce acid precipitation by one half, with much of the reduction coming from tightened restrictions on emissions of sulfur dioxide (Hunter). Electric utilities have a number of compliance options under the new regulations: switch to low sulfur coal; install scrubbers that remove sulfur from the flue gasses; switch to fluidized bed or other advanced and low polluting technologies; buy pollution rights; or switch to other fuels. All share one common attribute in addition to reducing pollution: they increase the costs of electricity production and raise its price to consumers while reducing the country's economic growth somewhat. The options are quite different, however, in their regional development effects. A switch to low sulfur coal will favor western coal producers who produce a lower BTU but much cleaner coal than their Eastern counterparts. The impact will be felt differentially in the East as well. For example, the southern part of West Virginia produces a high BTU coal that is relatively low in sulfur. That section of the state could benefit from the Clean Air Act. Producers in areas that only have high sulfur coal, such as northern West Virginia, Western Pennsylvania and parts of Kentucky and Ohio will clearly be hurt by the switch to low sulfur coal. One study estimates the Clean Air Act of 1990 will result in the loss of 2,000 jobs in north-

ern West Virginia while the southern part of the state will gain about 4,500 jobs (Hunter).

## **Forestry**

Forestry is a more complex natural resource industry than mining. Forests supply a number of marketed products and services such as timber that make a direct contribution to the economy. But the standing forest itself produces economic and other values, such as provision of wildlife habitat, watershed protection, erosion control and recreation generally not sold in markets, though they contribute indirectly either to the economy or to the quality of life in a region.

The major issues that involve forest development policy in the United States, currently and in the future, are environmental ones. The three most important are acid precipitation and ozone damage; endangered species and the preservation of biodiversity; and global warming.

The Endangered Species Act is probably the most controversial environmental program that affects forestry, particularly in the Pacific Northwest where timber companies are pitted against environmentalists over the fate of the remaining old growth forests. While the spotted owl has been the focus of the debate, it is really a minor actor in the overall policy issue. The primary issue is one of preserving habitat, species diversity and the old growth forests themselves versus the economic value of the timber for regional development and employment. So far, the Clinton administration has shown a willingness to compromise on the old growth issue. It seems to favor a policy that allows logging of old growth forests, but at rates lower than allowed in the 1980s, while preserving some large tracts for preservation of habitat. The keys in determining the balance between cutting and preservation are knowing exactly how much of the forest is required to provide habitat for endangered and threatened species and trading off the social values of species diversity and the value of the resource *in situ* against the value of the timber. Given the scientific uncertainty surrounding the critical size of an ecosystem to support a species, and the extreme difficulty of valuing such intangibles as species diversity, these are not simple issues to resolve.

## **Fisheries**

The story of fisheries in the United States is complex and involves a number of related and unrelated issues. The issues include overfishing, conflicts between commercial and recreational interests, regulations that offered too little too late, pollution, international boundary disputes and the introduction of exotic species.

Commercial fishing and industries related to commercial fishing make a substantial contribution to the U.S. economy. Commercial

landings alone were valued at \$3.1 billion in 1987 while imports of fish and fish products were valued at \$8.8 billion that year (Gordon). Recreational fishing also makes a large contribution to the U.S. economy, estimated in 1987 to be \$13.5 billion (Gordon). The future of recreational and commercial fisheries in the United States depends on the quality of the resource. Unfortunately, in many important regions that quality is declining. There have been significant reductions in fishery stocks in the Georges Bank fishery in New England, the Chesapeake Bay, the Columbia River fishery in the Pacific Northwest, Lake Okeechobie in Florida, and the Gulf of Alaska.

Once the Chesapeake Bay was a valuable fishery, producing oysters, blue crabs, striped bass and numerous other species. While the blue crab fishery continues to be important, oyster catch is much reduced and the striper fishery has been closed since 1985. The story of the decline of the Chesapeake Bay involves themes of over-fishing; reluctance of managers to place timely limits on catch; and damages and diseases linked to nonpoint pollution from agricultural and municipal sources.

While attempts to control point sources of pollution have greatly reduced pollution from toxic elements, pollution from nonpoint sources has not been nearly as successful. One reason for the limited success at controlling nonpoint pollution has been the reliance on voluntary programs rather than regulatory programs. This is beginning to change, with greater regulation of agricultural practices in proximity to the Chesapeake.

## **Outdoor Recreation**

There is no doubt that outdoor recreation has been, and still is, growing in importance in the U.S. economy. Every tourist dollar spent generates approximately two and one third dollars of additional economic activity. Tourists in the United States spent approximately \$272 billion in 1989, which, when accounting for multiplier effects, makes tourism responsible for 12 percent of the gross national product (GNP). By this account, tourism is the single largest industry in the United States, though it is such a heterogenous part of the economy that it is difficult to classify it as an industry (U.S. Travel Data Center). Attendance at state parks, national forests and national parks has continued to grow since World War II. Visitation at national forests and parks has grown from less than 40 million visits after the war to more than 300 million visits in 1987 (Harrington). State park attendance grew from 92 million visits in 1946 to 618 million in 1981. There are no consistent data on private recreational facilities, though it is thought that growth of this industry sector is at least as high.

Clearly, recreation is the industry that benefits the most from environmental regulations. The Clean Water Act helps improve stream and lake water quality for fishing, boating and swimming. Regulation of pesticides and restrictions on wetland conversion help preserve game habitat. The only negative effect environmental regulations have on tourism is increasing the costs of travel by increasing the costs of automobiles and fuels.

While outdoor recreation continues to grow, that growth rate is falling. The leisure time available to most Americans has declined rapidly, falling around 37 percent from 1973 to 1988 (Cordell). Leisure time has fallen because of the growth in two-wage-earner families, increased commuting time and increased time on the job. This drop in leisure time has affected the type and location of recreational activities. People are recreating closer to home and spending less time at the places they visit. People also spend a higher percentage of their available leisure time at or near their homes doing things like jogging and bicycling.

The implications of these trends for outdoor recreation in different regions of the country are not yet clear. The policy issues involve trading off the economic and other values associated with outdoor recreation with the alternative uses of the resources required by recreation. While recreation is a large and growing sector of the economy, it does have its negative side. Most recreation-based jobs are low-paying service sector jobs. Communities also face such problems as loss of identity, the transfer of power to nonresident landowners, and growth pains.

## **Conclusions**

All natural resource and environmental policy issues involve difficult trade-offs among alternative resource uses, economic development and environmental quality. The complexity of the issue depends, in part, on the resource involved. For mining, the issues are trade-offs between the economic value of the extracted resource and the environmental costs of extraction, processing and use. Forestry adds the complication of a resource that has one type of value when it is harvested and a mutually exclusive value as a standing forest. Moreover, many of the values of the standing forest, such as watershed protection, wildlife habitat and scenic beauty, are very difficult to measure in dollar terms. The fishery has all of the complications of forestry issues, such as pitting commercial against recreational interests, but adds the complication of a resource that has, in many areas, been severely damaged by nonpoint sources of pollution. Finally, outdoor recreation is a cross-cutting issue, one that is strongly affected by environmental quality and the decisions that are made on forestry and fishery management and land-use decisions that affect wildlife habitat and fisheries.

The role of public policy educators in this area is the same as with agriculture and other rural issues, i.e., to clarify extremely complex and controversial issues, increase understanding of alternatives and the trade-offs among alternatives, and provide an open, unbiased public forum for the exchange of ideas. If public policy educators do not help, who will?<sup>1</sup>

#### NOTES

1. A longer version of this paper is available on request from the author.

#### REFERENCES

- Cordell, H. Ken. "Outdoor Recreation and Wilderness." *Natural Resources for the 21st Century*, ed. R. N. Sampson and D. Hair, 150L pp. 242-268. Washington, DC: Island Press, 1990.
- Gordon, William G. "Fisheries." *Natural Resources for the 21st Century*, ed. R. N. Sampson and D. Hair, pp. 205-241. Washington, DC: Island Press, 1990.
- Harrington, Winston. "Wildlife: Severe Decline and Partial Recovery." *America's Renewable Resources: Historical Trends and Current Challenges*, ed. K. D. Frederick and R. A. Sedjo, pp. 205-248. Baltimore, MD: Johns Hopkins University Press, 1990.
- Hunter, Susan. "The 1990 Clean Air Act: Immediate and Long Term Impacts on West Virginia." *West Virginia in the 1990's: Opportunities for Economic Progress*, ed. R. J. Dilger and T. S. Witt, pp. 123-148. Morgantown, WV: West Virginia University Press, 1993.
- James, P. *The Future of Coal*. London, England: MacMillan Press, 1982.
- National Acid Precipitation Assessment Program (NAPAP). *1990 Integrated Assessment Report*. Washington, DC: Nov. 1991.
- Portney, Paul R., ed. *Public Policies for Environmental Protection*. Baltimore, MD: Johns Hopkins University Press, 1990.
- Sedjo, Rodger. "Forest Resources: Resilient and Serviceable." *America's Renewable Resources: Historical Trends and Current Challenges*, ed. K. D. Frederick and R. A. Sedjo, pp. 81-120. Baltimore, MD: Johns Hopkins University Press, 1990.
- U.S. Travel Data Center. *Discover America 2000*. Washington, DC: U.S. Government Printing Office, 1989.