



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# ENVIRONMENTAL QUALITY ISSUES

*Fred H. Abel*

*Chief, Economic Analysis Branch*

*Implementation Research Division, Office of Research*

*U.S. Environmental Protection Agency*

The principal objective of all federal agencies is to maximize the quality of life of all our citizens. The Environmental Protection Agency seeks to improve the quality of the environment, provided that the net effect of such improvements is to improve the quality of life. Considering the net effect recognizes that while improving the quality of the environment will increase social welfare, it may require giving up other activities which also increase social welfare.

This dilemma, the need to choose among desirable goals, sets the stage for what I consider to be the major environmental policy issue. That is, how much improvement in the quality of the environment does society want? The corollary to this is, how much will society pay to improve the quality of the environment? What will it trade off (and how much of it) to get environmental improvement? I believe this issue has to be resolved before any comprehensive environmental policy can be developed.

All of you have seen various lists of specific issues. As I see it, these can be described as three distinct sets of policy issues, depending upon the perspective taken. These are: (1) the specific pollutant issues, (2) the institutional issues, and (3) the goals or benefits issues.

The specific pollutant issues include items such as: pesticides use, erosion, animal solid waste disposal, crop and forest residue burning, agricultural processing plant wastes, salinity, plant nutrient runoff, forest clear-cutting, continuous cropping systems, area-wide sewer and solid household waste disposal systems, and rural human waste disposal systems.

The institutional issues are concerned with the methods of obtaining the benefits. You are familiar with the more important of these. They include standards and enforcement, taxes or effluent fees, subsidies, permits, and land use zoning as alternative or perhaps complementary means of obtaining environmental quality improvement.

I will not discuss in any detail the issues of either the specific

pollutants or the institutions. I will discuss the goals or benefits issues. I stated earlier that the major policy issue is, how much is society willing to pay for environmental improvement? The companion question is, exactly what benefits does society expect to receive for its money? The principal benefits can be grouped into four overlapping categories: risk aversion and reduction, damage reduction, maximizing the number of alternatives, and maximizing the natural state of the environment.

The first bundle of benefits to society from environmental quality improvement or pollution control is risk aversion and reduction. That is, if the level of pollution is reduced, the probability of that pollutant overloading the assimilative or adaptive capacity of the environment is reduced. This reduces the probability of collapse of some major ecological system with possible catastrophic results. I believe that the desire by society for this group of benefits has been the major force behind the current efforts to clean up the environment. This is true in spite of the fact, or perhaps because of it, that the probability of overloading the environmental capacity and the likely magnitude of the catastrophic results are unknown. You are all familiar with popular expressions of this benefit: control or ban DDT because it may someday build up in the environment to such a high level as to destroy human life; control air pollution or someday we won't be able to breathe, or the ice caps will melt because of the hothouse effect, or we will freeze because of the shielding effect; control water pollution or we will destroy the oceans and in turn human life itself.

The second group of benefits is damage reduction. People are being harmed by pollution. They get sick from air and water pollution, crop yields are reduced, buildings and other physical structures deteriorate more quickly, property values are depressed, and many firms (particularly recreational and commercial fishing firms) are forced out of business. Individuals and communities harmed by pollution seek environmental improvements that reduce the damages. Society in general also seeks the benefits of damage reduction because of the secondary or indirect effects on it. I believe the desire for this set of benefits will be the major force in sustaining our efforts to improve the quality of the environment.

The third group is the benefits of maximizing the number of alternatives. If water pollution closes a swimming beach or makes sport fishing unrewarding, if access roads or second home developments destroy a major wilderness area, if a dam destroys a unique area, the number of alternatives (in this case recreational) has been reduced. If we use raw nonrenewable resources instead of recy-

clinging, the number of alternatives in some future time is reduced. I believe that society desires to keep open as many alternatives as possible.

The last group of benefits is maximizing the natural state of the environment. A large number of organized groups and individuals value very highly the preserving or returning to the natural state. The accomplishment of this objective may provide some of the benefits mentioned earlier, such as reducing risk or maximizing alternatives. But there is a separate benefit of accomplishing this state in and of itself. Many people derive comfort and satisfaction simply from the knowledge that the natural state is being preserved or restored, even though they get none of the types of benefits found in the other three groups.

When any individual claims that he wants a better quality environment, he may be seeking any one or all of the above sets of benefits. Society's desire for a better quality environment certainly includes all four. The establishment and implementation of any environmental policy will likely provide some benefits of all four types. The choice of specific policies will depend upon the relative amount of each type of benefit as well as the magnitude of the net benefit being sought.

Research and extension education are needed for all three sets of issues, that is, specific pollutant, institutional, and benefit issues. As may be obvious from the way I presented them, I am doing research on the benefits set. I encourage you to keep all three sets in mind, no matter which set you concentrate on. Any research or extension education efforts you can direct toward the environmental area will help us to achieve the major goal of maximizing the quality of life for all our citizens.