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# Distributional Consequences of Environmental Regulation: Economics, Politics, and Environmental Policymaking

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# Distributional Consequences of Environmental Regulation: Economics, Politics, and Environmental Policymaking

Joseph P. Tomain

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April 22, 2170

(DOCUMENT I)

On this, the Bicentennial celebration of Earth Day, environmental archaeologists have made an extraordinary discovery. In the early 1990s, two decades after the “environmental movement” in the United States began, the town of Lawrenceville decided to establish a “new environmental order” by engaging in an exercise in environmental policymaking. Little remains of the program that was implemented. The town of Lawrenceville is now either a bucolic pasture or a sprawling metropolis, our satellite pictures and institutional memories are indecipherable from this distance in space and time. Nevertheless, two documents remain which help us locate the quaint environmental policies that Lawrenceville contemplated.

These two documents also reveal the pre-modern method of determining which environmental policies would guide the town. At that time, Lawrenceville let the citizens decide the town’s environmental course. Apparently, the town did not have access to the sophisticated and reliable methods of policy analysis now available to us. It is unfortunate that our satellite pictures are unclear because we cannot ascertain the success or failure of Lawrenceville’s “experiment in democratic choice” as one of these documents so charmingly put the matter.

Therefore, for edification or amusement, we commend to your attention two historical records: “Technical Paper No. 1” by Policy Consultants, Inc. and “Environmental Policy Report” by Lawrenceville Environmental Action Committee.

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**Joseph Tomain** is currently the Dean and Nippert Professor of Law at the University of Cincinnati College of Law.

## TECHNICAL PAPER NO. 1

To: **Lawrenceville Environmental Advisory Committee**  
From: **Policy Consultants, Inc.**  
Re: **Background Assumptions and Technical Concepts**  
Date: **February 1, 1991**

### Executive Summary

The Lawrenceville Environmental Advisory Committee (LEAC) commissioned Policy Consultants, Inc. (PCI) to perform a baseline study evaluating the tools available to environmental policymakers. Environmental policymaking is an exercise in applied economic and political theories. Yet, before we reach the application stage, familiarity with theory and terminology is necessary. In Technical Paper No. 1, PCI presents the background assumptions and technical concepts needed for LEAC to design an environmental policy for Lawrenceville. Once familiar with the lexicon of political economy, LEAC can identify the programs, frame the choices, and suggest decision-making methods for Lawrenceville’s environmental program.

### Background Assumptions

#### 1. Lawrenceville

Lawrenceville is a moderately sized university town situated in the middle of the United States with residential, industrial, commercial, and mixed zones and with a typical range of economic classes. In other words, Lawrenceville is the home to the rich, the poor, and mostly the in-between. Relatively progressive politically, as such mid-western towns are, Lawrenceville is concerned about its environment. Further, Lawrenceville is concerned about environmental equity as much as it is about environmental quality, and it is quite conscious of associated environmental costs.

In the spirit of participatory democracy, Lawrenceville assembled government officials, industry representatives, citizens, and a sprinkling of experts (including a lawyer and an economist) to form the Lawrenceville Environmental

Advisory Committee (LEAC) for the purpose of developing an environmental policy. Technical Paper No. 1 is intended for its use.

## 2. Environmental Perspectives

In framing an overall environmental policy, LEAC must be aware that there are three contemporary perspectives on the environment. The first perspective is the traditional path of energy-environmental regulation in which economic growth is the dominant part of the policy.<sup>1</sup> A counter-perspective can be described as the *End of Nature*<sup>2</sup> or the *Limits to Growth*<sup>3</sup> perspective in which drastic changes in current energy-environmental policies are necessary to avert global disaster. The third perspective is an attempted synthesis of the first two. It is called the sustainable development perspective<sup>4</sup> in which a current environmental policy "meets the needs of the present without compromising the ability of future generations to meet their own needs."<sup>5</sup>

These three perspectives present distinct ways of looking at the world, and they generate distinctly different policies. However, we present these views not to demonstrate how they are different, but rather to illustrate how they are similar. Each makes claims of efficiency. Although these are apparently different policies and their distinctions are grounded in different assumptions and beliefs about the world, each perspective claims that it is better because it will maximize social welfare. Each perspective claims to promote economic growth.<sup>6</sup> Some of the perspectives claim that their policy will make the world a nicer, happier, and "better" place. Yet, each also argues that it is cheaper. Consequently, we suggest that LEAC not ignore matters of economic growth and efficiency.

## 3. The Market and Government Regulation

The political economy of the United States is based on the assumption that the give and take of a competitive market is desirable. Theoretically, a market facilitates capital formation, encourages technological innovation, limits transaction costs, and promotes individual liberty and equality.

In short, markets promote growth, efficiency, and preserve personal freedom. Given this list of virtues, there is no good reason for government intervention in the face of competitive markets because, at the very least, government intervention raises the cost of doing business and reduces gains from trade.<sup>7</sup> Moreover, government intervention may stifle, rather than promote competition, by inefficiently restricting an industry, or it might redistribute wealth and income in undesirable ways. Finally, it substitutes collective for

individual choice.

For the market to function competitively, certain conditions must exist:

- (1) there must be numerous buyers and sellers;
- (2) there must be a large enough quantity of goods so that no single buyer or seller perceives that he can affect price by varying either the quantity demanded or supplied;
- (3) the product must be homogeneous;
- (4) there must be accurate and complete product information for buyers and sellers; and
- (5) there must be freedom of entry and exit from the marketplace.<sup>8</sup>

The world as we know it does not conform to the micro economic model of competitive markets. The nasty and brutish marketplace is frequently imperfect because the competitive conditions do not exist. Buyers or sellers flex their market power muscle. Information is inaccurate, skewed, wrong, deceptive, or fraudulent. Production involves social costs, such as pollution, and creates waste.<sup>9</sup> Each of these defects can hamper the efficiency of the market and can hinder economic growth. As if things are not bad enough, wealth and income are unevenly distributed in society, and imperfect markets can aggravate such uneven distribution. Government regulation, then, can be used as a means of correcting market defects for the express purpose of enhancing efficiency or for redistributing wealth or income.

Government regulation in general, and environmental regulation in particular, are the government's response to perceived imperfections in a less than free market. LEAC, therefore, can justify environmental regulation by identifying a market imperfection.

## 4. The Structure of Environmental Problems

The discipline of welfare economics<sup>10</sup> helps explain and justify government intervention in the area of environmental regulation. Welfare economics, of which environmental economics is a specific application, holds that private markets do not always take account of the social costs associated with production and consumption. The basic premise of environmental economics<sup>11</sup> is that the residual effects of consumption and production activities are not accounted for in the price of the product.<sup>12</sup> Consequently, reliance on a *laissez-faire* political philosophy, or on the free market, is likely to interfere with the wisest use of society's scarce resources and adversely affect Lawrenceville's environmental quality.

Environmental problems are complicated and can be characterized as polycentric,<sup>13</sup> an attribute requiring the special attention of Lawrenceville's policymakers and decision makers. Frequently, an environmental issue will involve multiple parties from both the public and private sectors. A policy to improve air or water quality, for example, can involve federal, state, and local government officials, as well as industry, labor, and neighborhood representatives. Further, the participant's level of interest varies. A federal official may be less sympathetic to the peculiarities of a local situation than a town council member. Similarly, although both are private citizens, the interest of a member of a grassroots environmental group is likely to differ in intensity from that of an employee whose job may be affected by stringent environmental regulation.

Environmental problems are often multi-jurisdictional and transgenerational. The siting of hazardous substances facilities involves federal, state, and local law, and these regulatory layers may overlap or conflict. Further, many hazardous substances affect not only the present environment, but future generations as well. Radio-active waste, for example, will affect the environment for thousands of years.

Environmental issues also contain positive and normative complexities and uncertainties. The long-term consequences of low-level radiation are scientifically uncertain. The longevity of salt domes housing spent nuclear fuel is technologically uncertain. Likewise, cost-benefit analyses comparing one policy with another are often economically and financially uncertain. In comparison to these positive uncertainties, an obvious example of a positive complexity is the resolution of a large, long-term, multi-party, multi-jurisdiction law suit.

Normative uncertainties and complexities abound in identifying, framing, and interpreting the data, information, and resolution of such polycentric matters. It should be pointed out that polycentric environmental problems involve a variety of disciplines such as science, technology, economics, finance, law, sociology, and politics, therefore, it would not be incorrect to label environmental problems as socio-scientific,<sup>14</sup> trans-scientific,<sup>15</sup> or hybrid.<sup>16</sup> These multi-disciplinary problems, with their attendant complexities and uncertainties, do not lend themselves to simple resolution. Nor do they lend themselves too often to technical, quantitative resolutions. Rather, environmental policymaking is more a political act than it is an exercise in objective, scientific, or technical methodology.<sup>17</sup>

These background assumptions are presented so that LEAC can place its environmental policymaking within the context of the contemporary political economy. Although we

start with a predisposition toward the free market, it is at least equally likely that government intervention may be needed to improve Lawrenceville's environmental quality. To better assess whether intervention is warranted and, if so, which regulatory tools should be used, PCI has briefly described some fundamental technical concepts.

### Technical Concepts

#### 1. Efficiency

Efficiency can be roughly defined as a policy that either maximizes wealth or reduces costs. More refined definitions would include an explanation of Pareto optimal efficiency theory: an optimal state in which it is no longer possible to change states without harming at least one person economically. A corollary definition is one of Pareto superiority: a change of state that improves the position of at least one person without harming another. However, efficiency as defined in Kaldor-Hicks terms is a change of a state resulting in net benefits outweighing net costs with no requirement that winners compensate losers.<sup>18</sup> These definitions will help LEAC assess the likely efficiency of the environmental programs it develops.

#### 2. Value

To assess efficiency, it is necessary to assign some "value" to a program. Under the efficiency criterion, the value of a good or service is based on a person's "willingness to pay".<sup>19</sup> Markets neatly value goods and services based on that willingness. Unfortunately, it is impossible to make interpersonal comparisons of social utility regarding environmental quality because it is impossible to know accurately how any given individual values the quality of the environment. Ability to pay also enters into the valuation process, but ability to pay need not detain us at this juncture. It should be emphasized, however, that the valuation process based on willingness to pay thus depends on a relatively well-functioning market.

#### 3. Distribution

It is conceivable that a particular policy can be efficient by increasing the value of environmental amenities in Lawrenceville. It is also conceivable that those amenities, or the costs of those amenities, will be distributed unevenly, therefore, policymakers are advised to pay attention to the distributional consequences of their policies. Neither the Pareto nor the Kaldor-Hicks models of efficiency presuppose a particular distribution. The Kaldor-Hicks model requires only the theoretical ability to compensate losers. Actual

compensation is not required for the model to work, and a policy determined by the model to be "efficient" may actually increase distributional inequities.

The distributional effects of environmental regulations involve at least three variables and suggest a fourth. First, environmental regulations are intended to distribute benefits. Second, they also distribute costs, and the discussion of costs and benefits naturally devolves into a discussion of cost-benefit analysis. Third, a sound cost-benefit analysis depends on the identification of competing programs rather than on an abstract discussion of costs and benefits in general.<sup>20</sup> These three elements, costs, benefits, and programs set the stage for the fourth variable, policymaking. More accurately, the policymaking question might well be reduced to: How should the payments be made and by whom?

#### 4. Positive and Normative Economics

In their analysis of distributional consequences, policymakers should distinguish between two uses of economics: positive and normative. Positive economics describes what the economic consequences of an activity are or are likely to be. Normative economics evaluate what the consequences of an activity are or what the best state of the world *ought* to be. Normative economics is more properly the domain of the policymaker or the political theorist, than the pure economist. Thus, normative economics is distinguishable from positive economics because it is expressly evaluative rather than descriptive.

#### 5. The Tiebout Model

The Tiebout Model is an attempt to provide a market-based solution to the distribution of public services. Given many local governments and fully mobile, well-informed consumers, individuals will choose a neighborhood because of a package of public services such as schools, parks, roads, libraries, and fire and police protection. In this way, consumers exhibit their preferences and the "value" they place on public amenities by voting with their feet in their choice of neighborhoods.<sup>21</sup> Similarly, individuals can choose to live in one neighborhood or another depending on environmental quality.

#### 6. The Coase Theorem

A simple formulation of the Coase Theorem is: "If there are zero transaction costs, the efficient outcome will occur regardless of the choice of legal rule."<sup>22</sup> Three corollaries of the theorem are significant for policymakers. First, the assignment of a legal entitlement does affect the allocation of transaction costs. Second, the allocation of transaction costs

affects the distribution of wealth. Third, the existence of transaction costs may affect efficiency. Clearly, legal rights, in this case, environmental regulations, do affect distribution and efficiency. As LEAC assesses the costs and consequences of environmental policies, it should pay attention to the transaction costs of the regulations and the method of imposing those costs.

#### 7. Arrow's Impossibility Theorem

Economist Kenneth Arrow theorizes that even in a simple democratic process where people represent their preferences by voting, individual preferences cannot be aggregated into rational social preferences.<sup>23</sup> Although a policymaker may prefer Program A to Program B and may prefer Program B to Program C it does not follow that a policymaker prefers Program A to Program C! There is no transitivity in the policymaker's preference. "If we are concerned about defining public interest, Arrow's Theorem presents a conceptual barrier to combining individual preferences into some overall measure of social welfare. If our concern instead is with voting methods, Arrow's Theorem shows that no method of voting is immune from breakdowns."<sup>24</sup>

At first glance, Arrow's Theorem suggests that the policymaker's task is impossible. We believe that the theorem advises LEAC to take care in how a policy is chosen rather than focusing on achieving the "optimum" public policy.

#### 8. Cost-Benefit Analysis

Public policymakers often use cost-benefit analysis in choosing between competing projects. In a lengthy study of federal cost-benefit analysis, the authors defined its use as:

[D]etermining the social goals to be maximized, identifying and assessing accurately and comprehensively the benefits and costs of proposed agency action, accounting for who will benefit by each option in a detailed manner and by whom the costs of each will be borne, and providing an exposition of alternatives detailing the foregoing information will assist the decisionmaker in choosing among several possible actions (including no action).<sup>25</sup>

As it manages complex data and focuses on positive and normative issues, LEAC should find that cost-benefit analysis is a useful tool for comparing several policies.

**(DOCUMENT II)****LAWRENCEVILLE ENVIRONMENTAL ADVISORY  
COMMITTEE****Environmental Policy Report**

The Lawrenceville Environmental Advisory Committee (LEAC) hereby submits its first environmental policy report to the governing body of Lawrenceville. Contained in this report is a discussion of three environmental policies considered by LEAC:

(1) The Clean Streets Program—to improve the quality of the streets in the poor neighborhoods so that these streets are of the same quality as those in the rich neighborhoods.

(2) The Clean Air Program—to improve the air quality from Paper Mill, Inc. so that all of the citizens breath cleaner air.

(3) The Outdoor Recreation Program—to enhance the recreational amenities of the Lawrenceville reservoir by improving fishing, swimming, and boating facilities.

After a series of meetings, testimony from interested parties, and extensive discussion and debate, we find that each of the policies considered has many pros and cons, as well as benefits and costs. We further find that the adoption of one or more of the suggested policies is best accomplished through the give and take of the political process, rather than through assignment to a group of technical experts. Therefore, we make no specific recommendations as to adoption or rejection of one or more of these three policies. Rather, our recommendation is that the Lawrenceville body politic consider this report and adopt its recommendations as appropriate.

LEAC believes that several goals are paramount in the adoption of any environmental policy for the town of Lawrenceville. We believe that Lawrenceville should improve the quality of the environment equitably and efficiently. We further believe that any environmental policy should be conscious of the distribution of benefits and costs to our citizens.

LEAC assumes that Lawrenceville can improve the quality of the environment equitably, and efficiently, without any drastic change in lifestyle. LEAC recognizes that extreme environmental perspectives exist and that perhaps a better

world can be attained by dramatic changes in lifestyles. However, LEAC does not address issues of lifestyle because lifestyle is too murky and amorphous an idea for policymaking purposes. We are in no better position than the citizens of Lawrenceville to decide how individuals should live their lives relative to the use and consumption of energy and environmental goods. Therefore, we explicitly avoid making “lifestyle” choices for Lawrenceville and leave such choices to the political process and to individual lives.

As we proceed through our analysis, LEAC recognizes that the concepts of efficiency and distribution have dramatic implications for the design, choice, and the implementation of any particular policy. For the purposes of this report, LEAC assumes that more wealth is better than less, and that less cost is better than more. Given these assumptions, we can proceed to assess three specific environmental programs.

**Programs**

LEAC presents the Town of Lawrenceville with a discussion of the distributional consequences of three distinct and perhaps complementary environmental programs. The first program, the Clean Streets Program, is intended to have pro-poor environmental effects. Next, the Clean Air Program is intended to be wealth-neutral. The third program regarding outdoor recreation appears to have pro-rich consequences. The discussion of each program presents the likely distribution of benefits and costs. Each discussion concludes by speculating on the overall efficiency of the program.

**The Clean Streets Program**

*Distribution of Benefits.* Even the most hardened microeconomic theorist recognizes that wealth is not evenly distributed throughout society. Some individuals are poor and some individuals are rich. It is not too much to extend this assumption by saying that the poor and the rich do not live in the same neighborhoods, although in many locations they are not too distant neighbors. Consequently, we recognize that the introduction of any government program, let alone an environmental program, upsets the financial status quo. We also acknowledge that transition costs are associated with any change in legal relationships.<sup>26</sup>

In a town of rich and poor, how should environmental benefits be distributed? If the initial distribution of wealth is unequal, a pro-poor environmental policy is not unreasonable. An example of a pro-poor environmental policy would be to spend money cleaning the streets in a poor neighborhood to make them as clean as those in a rich neighborhood. The Clean Streets Program would require increasing public

expenditures in poor neighborhoods to equalize the distribution of environmental benefits among all citizens.

There is no effective market in clean streets. Absent an elaborate regression analysis, people choose neighborhoods for a panoply of amenities such as house and yard size, property values, schools, proximity to employment, as well as the cleanliness of the streets. Of course, it is no accident that the streets are cleaner in richer neighborhoods, but it seems a far stretch to single out clean streets as a dominant reason for choosing a neighborhood. Although we relax this assumption for the next program, here we assume that it is difficult to gauge the value of clean streets to consumers because it is only one in a package including many amenities. Here we assume that it is too difficult, and too costly, to isolate clean streets from that package.<sup>27</sup>

Because we cannot tell if either rich or poor value clean streets more, we assume that all people value clean streets equally. As a corollary, we assume that the benefits of clean streets are equally enjoyed across the population. Absent reliable empirical evidence to the contrary, it is not unreasonable to assume that rich and poor equally value and equally enjoy the benefits of clean streets.

Thus, if we assume that persons equally value and equally enjoy the benefits of clean streets, an environmental program that equalizes the distribution of this particular environmental benefit is reasonable even though it has identifiable pro-poor effects.

From a distribution of benefits standpoint, if our policy improves the lot of the poor and does not disadvantage the rich, then the policy is Pareto efficient. Additionally, if the benefits to the poor neighborhood are greater than the losses to the rich one, the policy satisfies the Kaldor-Hicks efficiency test as well.

Life, even economic life, is hardly so simple. Adopting a zero-sum approach,<sup>28</sup> any increase in expenditures for cleaning the poor neighborhood must come from somewhere, and we cannot know if the benefits outweigh the losses until the costs are calculated. We also cannot know whether the program is efficient until costs are discussed. Further, costs are imposed someplace in the economy. This realization of costs and the method of financing the program are integral in assessing the wisdom of the policy.

***Distribution of Costs.*** The Clean Streets Program

potentially will impose two costs on Lawrenceville. The first is the direct cost of cleaning the streets. The second is the indirect cost of foregoing some other resource if Lawrenceville reallocates expenditures. Total cost depends on the method of funding. If additional funds are raised, then the town incurs only direct costs.<sup>29</sup> If expenditures are reallocated, then direct costs may be reduced or eliminated, but indirect costs are also incurred.

The distribution of costs depends directly on how those costs are funded. Lawrenceville can consider different funding methods. First, a clean streets surcharge can be levied evenly, either per capita or per household, among all residents. Under this method, some costs are distributed onto the rich with no offsetting benefits. Second, a surcharge can be levied on the beneficiaries thus distributing costs directly to the poor.

Third, an explicitly redistributive policy can be adopted and the increased tax can be assessed against the rich. Fourth, Lawrenceville can choose to reallocate resources by moving funds from one program to another. Finally, Lawrenceville can choose to let the "market" decide. In the case of clean streets, the market is for a package of public goods and residents "choose" their package by moving into particular neighborhoods. The market method depends on whether there is a relatively well-functioning market in clean streets. We have assumed, however, that such a market is not available.

### **The Clean Air Program**

***Distribution of Benefits.*** The Clean Streets Program is aimed at improving the environmental quality of the poor neighborhoods. Matters of economic discrimination are delicate, yet necessary. Other environmental programs less obviously benefit one economic class or another. In Lawrenceville, for example, Paper Mill, Inc. is the source of air pollution that adversely affects much of the town with little regard for neighborhood boundaries. Depending on air patterns, some neighborhoods are affected more than others, but this is a function of air currents, not prosperity. Over time, air pollution harms all citizens and properties. An environmental policy that reduces the amount of air pollution will benefit all citizens in relatively equal measures. Therefore, the Clean Air Program can be characterized as providing a wealth-neutral distribution of benefits insofar as every individual's quality of life is evenly and equally improved.<sup>30</sup>

*This realization of costs and the method of financing the program are integral in assessing the wisdom of the policy.*

This raises the question of how much an individual values an improvement in the quality of the air he breathes. As with the Clean Streets Program, there is no obvious way to compare intersubjective preferences. A poor citizen might subjectively "value" clean air more than a rich citizen, but those measurements are difficult, if not impossible, to make. Consequently, we assume that all Lawrenceville citizens value clean air equally. Given the relatively equal distribution of pollution, the extent to which persons can choose to live in neighborhoods with cleaner air is not clear. Land values and rents may reflect the quality of the environment so that under the Tiebout model, individuals can choose clean air as an amenity. The reality is that the distinction between rich and poor, relative to clean air, lies somewhere in between pure equality and the Tiebout world.

[G]eographical location has, to some degree, permitted individuals to purchase different environmental qualities in accord with differences in their effective demands and, as is to be expected, this bears a strong relationship to income. The poor live in the most heavily polluted sections of metropolitan areas, while the wealthier seek out the more attractive sites . . . . The rich and the poor cannot afford to live too far apart; the latter offer jobs to the poor, and the former offer services to the rich.<sup>31</sup>

The distribution of benefits should cut across all economic classes. Everyone, rich and poor, is made better off by cleaner air. Relative to distribution of benefits, the Clean Air Program is Pareto efficient because all citizens benefit with no one being worse off. Yet, caution in this analysis is advised. Although the benefits may well be evenly and equally distributed, cost allocation is another matter. Thus, relative to Kaldor-Hicks efficiency, the costs must be assessed before net gains or losses are known.

***Distribution of Costs.*** The costs of the Clean Air Program, like those of the Clean Streets Program, are both direct and indirect. Unlike the Clean Streets Program, the indirect costs are more identifiable and more substantial. The direct costs are the costs of pollution control. The indirect costs will be realized depending on the method of financing that is chosen.

Lawrenceville can raise taxes or reallocate resources as contemplated by the Clean Streets Program. These resources

*A poor citizen might  
subjectively "value"  
clean air more than a  
rich citizen . . . .*

can then be used to purchase appropriate pollution controls for Paper Mill, Inc. Another method is also available to Lawrenceville. Air pollution is the classic example of a spillover cost or an externality. Paper Mill, Inc. prices its products based on its costs. These prices, however, do not include the social costs of the air pollution. To better reflect the true cost of production, Paper Mill, Inc. should internalize those social costs by

incorporating production costs, profits, and social costs into its prices. The failure to "internalize the externalities" means that Paper Mill, Inc.'s goods are over-consumed and waste is created. This market failure also suggests that at least the direct cost of pollution control should be imposed on the factory, rather than on the citizens, either through additional taxes on polluting factories, or a reallocation of resources.<sup>32</sup> Assuming that Lawrenceville chooses this method of financing its Clean Air Program, the issues of indirect costs and the distribution of direct costs are more clearly raised.

Assuming that Paper Mill, Inc. is not a monopoly, but is a company in a competitive industry, the imposition of pollution control costs will affect profitability.<sup>33</sup> Increased costs reduce profits and those most likely to be affected are shareholders, consumers, and workers. How much cost for pollution control a company can bear depends on its ability to "shift this initial cost burden to consumers by raising prices, or to workers in the form of lower employment, lower wages, or both, or to shareholders through smaller dividends."<sup>34</sup>

If Paper Mill, Inc. is in a moderately competitive industry, as costs rise, prices will rise, and consumers will bear the costs; or profits will decline and shareholders will bear the costs; or some combination of the two. If the industry is highly competitive and Paper Mill, Inc. cannot raise prices without losing market share, then profits will decline. In either case, if other firms do not bear similar pollution control costs, then increased costs will also reduce profitability.

If Paper Mill, Inc. is a marginal firm and the pollution control costs are high, the added expenditures will threaten the operation of the company and the jobs of Lawrenceville citizens. The loss of jobs and revenue constitute indirect costs that have a dramatic effect on how Lawrenceville citizens "value" improved air quality. If the worst case occurs, can Lawrenceville afford the unemployment and the reduced tax base?

Until the direct and indirect costs are calculated, we have no way of knowing whether the Clean Air Program is either Pareto or Kaldor-Hicks efficient, even though environmental



benefits are distributed to everyone. Only if the value of clean air is greater than the cost; each citizen benefits; and no one loses in the process, will the Clean Air Program be both Pareto and Kaldor-Hicks efficient. If the benefits outweigh the costs, then the program is Kaldor-Hicks efficient without necessarily being Pareto efficient because either rich or poor can be made worse off due to the imposition of either direct or indirect costs.

### Outdoor Recreation Program

**Distribution of Benefits.** The Lawrenceville Reservoir presents the town with an opportunity to increase the environmental amenities available to its citizens and others. Currently, the Reservoir is used to generate hydroelectricity and for the town's water supply. With improvements, the Reservoir can also be used for fishing, swimming, boating, camping, and increased green space.

The benefits of the increased use of the Reservoir will be distributed directly to those persons who use it. Citizens and non-citizens alike can enjoy outdoor recreation, and the Reservoir will be open to all.

Desirable as outdoor recreation can be, if one considers outdoor recreation more of a luxury than a necessity, this program, in contrast with either the Clean Streets Program or the Clean Air Program, is a pro-rich environmental program. In theory, the outdoor recreation program is available to all; in effect, it is available only to those who can afford the activity. Here, unlike the other two environmental programs, ability to pay plays a more crucial role. Although swimming and fishing are relatively inexpensive, boating and camping are not, therefore, wealth matters if the facilities are to be used.

**Distribution of Costs.** As with the previously discussed programs, the distribution of costs for the Outdoor Recreation Program depends upon the method of financing improvements to the Reservoir. The public coffers, either through new taxes or a reallocation of resources, can be used to make the necessary improvements. Analogous to imposing the costs on Paper Mill, Inc., the direct costs of either the capital improvements or operating expenses or both can be levied directly on the users through recreation fees. Through user fees, the beneficiaries of the outdoor recreation program directly absorb the costs.

*Increased costs reduce profits and those most likely to be affected are shareholders, consumers, and workers.*

User fees have at least a surface appeal. The market, rather than government regulation, is relied upon to distribute costs. Individual autonomy is advanced through a "willingness to pay." Unfortunately, user fees are likely to be a disincentive for the poor to use this amenity. Indeed, commentators on environmental protection have advanced a general argument that higher income groups have a greater demand than poorer individuals for such things as clean air, clean water, and outdoor recreation.<sup>35</sup> This greater demand among the rich is based on the following assumptions: that environmental quality is a normal good that is purchased in greater quantity by individuals with more money; that rich and poor prefer environmental quality equally; and that there is a fixed price relative to income. In simpler terms, the rich can afford to "buy" more environmental goods than poor individuals can. These assumptions seem reasonable, and we do not have the data to refute them. Consequently, the Outdoor Recreation Program is effectively pro-rich if user fees are used to distribute costs. If Lawrenceville wishes to make this amenity available to all of its citizens regardless of wealth, then another method of cost allocation is necessary and some sort of public financing is advised.

Again, to determine efficiency, the value of the costs as well as the benefits must be known. User fees are likely to promote efficiency because the reservoir will be used in the exact amount that persons value the resource. If redistribution is considered and Lawrenceville wants this amenity available to all of its citizens, further analysis is necessary. Before the program is deemed to be efficient, we need to calculate the value of the benefits and the costs. We must also determine whether benefits outweigh the costs and whether rich or poor or neither are disadvantaged.

### DISTRIBUTIONAL CONSEQUENCES OF ENVIRONMENTAL POLICIES

We presented three environmental programs and have discussed the distribution of benefits and costs so that the programs exhibit pro-poor, wealth-neutral, and pro-rich consequences. It is a curious anomaly that each of these programs may very well distribute benefits in a pro-rich fashion and distribute costs in a way that disadvantages the poor. An equally curious phenomenon is that we can hypothesize a situation in which each program has the

opposite effect of a pro-poor distribution of benefits and an anti-rich distribution of costs.

### **Pro-Rich Benefits/Anti-Poor Costs**

Under the Clean Streets Program, the benefits can be distributed to the rich if, as the environmental quality of the neighborhood increases, so too does the land value or the economic rents. Costs under this hypothesis are distributed to the poor if the tax is evenly assessed against all taxpayers. Under such circumstances, the tax is regressive because the poor are paying a tax that has the effect of pricing them out of their own neighborhood. The result is a form of environmental gentrification.

By improving air quality throughout the town, the Clean Air Program can have similar effects by raising land values and economic rents. An evenly assessed tax for the Clean Air Program is just as regressive as the tax for the Clean Streets Program. In the situation of the marginally profitable Paper Mill, Inc., the loss of jobs may harm the poor and consumers more than it harms the rich.

Finally, the Outdoor Recreation Program benefits the rich because they are more likely than the poor to use the facilities, and the poor are disadvantaged by not having this amenity available to them because of the prohibitive cost.

This discussion of pro-rich benefits and anti-poor costs is intentionally a caricature of a lopsided environmental policy, yet the point is instructive. The distributional consequences may not achieve that which is intended. To emphasize the point, we can hypothesize the opposite consequences.

### **Pro-Poor Benefits/Anti-Rich Costs**

The Clean Streets Program can have attributes of a pro-poor policy with anti-rich costs by taxing only the rich or by assessing a progressive tax to clean the streets in poor neighborhoods. Likewise, a Clean Air Policy can be designed that improves air quality for all, including the poor. The Clean Air Program could provide for reallocation assistance or job training for the poor who may lose their jobs because of factory pollution controls. In addition, the program could impose the pollution control costs on the company's shareholders, or it could ask the rich to subsidize the program through a progressive tax. Finally, an Outdoor Recreation Program can be designed that provides discounts or direct subsidies to the poor at the expense of the wealthier users through higher fees for boaters than for bathers.

All of which is to say that distribution, redistribution really, matters and is a central issue in environmental policymaking. These antithetical policy positions demonstrate that policy choices are more than the product of

an economic analysis. The fact that the same policies can have diametrically opposed sets of consequences indicates that policymaking comes packaged in an ideological envelope.

## **CHOOSING ENVIRONMENTAL POLICIES**

Given the problems in identifying the costs, benefits, and distributive consequences of these environmental programs; in determining the programs' net effects; and the difficulty of clearly identifying the winners and losers, any policymaker could reasonably assess the problem as insoluble. Policy preferences contain deep conflicts, if not outright contradictions. Indeed, we have no disagreement with the proposition that the perfect or even best policy may well be only a theoretical possibility. Yet, Lawrenceville does not have the luxury of discerning the best state of the world. Rather, pragmatic choices need to be made even in the face of great uncertainties. There must be some way to decide which of the programs is right for our town. Two methods, each with its own attendant difficulties, are available to policymakers, cost-benefit analysis and the political process.

### **Cost-Benefit Analysis**

In Lawrenceville, choices must be made among three environmental programs or maintaining the status quo. Choices must also be made about methods of funding any of the programs chosen. For each program, we have begun to identify the costs and benefits. It should be quite clear, however, from the admittedly brief discussion, that we have only hinted at the range of costs, risks, and benefits of each program.

In the Clean Air Program, for example, the worst case scenario posited that Paper Mill, Inc. might close, creating unemployment and a reduced tax base. However, unemployed workers require social services, and a reduction of taxes may require further reductions in social services. Yet, the closure of Paper Mill, Inc. may result in a new industry moving to Lawrenceville, one that pollutes less, employs more, and increases taxes. Unfortunately, crystal ball gazing is part of cost-benefit analysis.

Cost-benefit analysis is of limited usefulness and cannot be relied upon as the sole public policymaking tool. Frequently, the transaction costs of gathering data and information may cost more than the program itself. We have not even begun to explore the toxicological and epidemiological consequences of air pollution because gathering and analyzing such information is simply too expensive an undertaking. Nor can cost-benefit analysis provide trustworthy data on the value of human health or life. Indeed, quantifying such matters as the

value of a life saved by reduced pollution is an uninformed guessing game. Cost-benefit analysis tends to work best with quantifiable variables.

Cost-benefit analysis can gather data, sort information, and highlight sensitive normative and positive issues. The method is a way to deal with large masses of complex and often conflicting quantitative data. Cost-benefit analysis, however, cannot decide delicate moral, social, and political issues that arise in the allocation of scarce natural resources.<sup>36</sup>

Whatever the technical and theoretical criticisms of cost-benefit analysis, public decision makers must choose from among competing alternatives, and they must articulate the reasons for their choice. Cost-benefit analysis assists decision makers in articulating the reasons for their decisions by identifying the costs, risks, and benefits. The rationale behind public decision-making must be explicit if the decision is to attain legitimacy. If the goals or the objectives of the public decision maker are not articulated, then the decision may not be publicly accepted. Parenthetically, as a matter of law, the reasons for administrative decisions must be given in order to satisfy due process. Thus, the rationale behind public decisions must be given so that the decision is both politically and legally legitimate.<sup>37</sup>

Controversy over environmental law and policy is inevitable. Although it can be argued that objectively identifiable conflicts are capable of specific resolution, at least theoretically, public policy issues, because of their normative content, do not have objectively verifiable and scientifically correct answers. Instead, the resolution of public policy conflicts depends on a legitimate and politically acceptable decision-making process. Legitimacy can be attained through the give and take of the political process even though we recognize that the "best" solution may not be attained. Public decision-making fundamentally involves political choices, and cost-benefit analysis is best regarded as merely one tool for illuminating the issues. In effect, cost-benefit analysis sets the stage for the political decision-making process.

### The Political Process

As a matter of political choice, two basic alternatives present themselves, the free market or government regulation. "Choosing" the free market simply means doing nothing: allowing the "market" to allocate and distribute the benefits and costs of environmental quality. If policymakers decide

that the market for environmental quality is seriously defective, particularly because of the externalities involved, then regulation is justified and political choices are necessary.

LEAC believes that the market in environmental quality is seriously defective and that cost-benefit analysis is inadequate to decide among competing projects and among various uses for public funds.

[T]he essence of environmental issues is that they involve externalities and public goods. The combination means that only in rare cases can we appeal to familiar theorems about the splendid welfare results produced by the free market. . . . An explicit decision in favor of a non-market mechanism opens a wide range of alternatives for consideration . . . ."<sup>38</sup>

We further believe that public decision-making on matters of general policy cannot be left to an advisory committee or an "expert" body such as an administrative agency or special task force. Such bodies can be directed to design, implement, and evaluate particular plans, but choosing environmental programs should be left to the democratic process.

Three democratic methods suggest themselves: Lawrenceville's elected officials who serve in a legislative capacity can choose; an environmental program can be the product of a town meeting; or environmental initiatives can be placed on the ballot. Each of these methods have different refinements, but they are all methods of democratic choice. LEAC recognizes that democratic choice is not fault free. Choosing an environmental program through any of the listed methods is subject to the flaws of majoritarianism, factionalism, and strategic behaviorism among other imperfections. Still, democratic choice is valuable precisely because it promotes public participation, approaches legitimacy, and incorporates ideology. Overall, we believe that the democratic process is a better way to reflect the public interest than reliance on either formal cost-benefit analysis or "expert" policymakers.

If cost-benefit analysis is a defective decision-making method because it obscures socio-political norms, then the political process suffers from the opposite defect of inattention to quantitative and techno-scientific matters. Furthermore, it is not unlikely that financial self-interest will

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play a significant role in public decision-making regardless of whether private or public individuals or interest groups are deciding. The role of self-interest may cause majorities or factions to bend the "public interest" to their liking. This is a regrettable circumstance. However, excessive self-interest is tempered and the range of choices is limited by the institutional arrangements that guide the formation, the execution, and the evaluation of public policy.

Because of constitutional constraints, Lawrenceville cannot adopt an environmental program that is irrational, too costly, or distributes substantial costs or substantial benefits to one group or another. Substantively and procedurally, the public policymaking process must comport with the Constitution, statutes, and ordinances duly enacted. Any environmental program that is adopted must fit the tradition and extant laws under which the citizens of Lawrenceville live. To ensure that the environmental program has the requisite consistency, legitimacy, and rationality, the judiciary exists to curb policy abuses or the disenfranchisement of segments of our citizenry. An imperfect world to be sure, yet it is a rational one committed to a democratic rather than a bureaucratic ideal. The political decision-making process is also committed to the history and tradition of constitutionalism and to the democratic ideals of robust debate, public deliberation, and open choice.

We believe that "in a democracy, the political process creates the public interest in the process of searching for it."<sup>39</sup> Consequently, LEAC's environmental programs should be

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part of the democratic agenda of Lawrenceville.

#### Conclusion

Environmental programs are polycentric. Such programs involve numerous public and private actors and contain issues imbued with substantial positive and normative uncertainties and complexities. There is no single "expert", individual, or agency that can or should set such policies. Rather, the "best" outcome may well be the one that achieves the greatest legitimacy, through public acceptability that is achieved through the political process, and not through the microeconomic model.

LEAC and its Environmental Report can be seen either as a success or a failure depending on your particular view of the policymaking process. If you perceive the policymaking process as one that reaches the "optimum" outcome based on the best available empirical (for our purposes scientific, technological, financial, and economic) data, then you may label this experiment a failure for refusing to make specific recommendations. If, however, you see policymaking as a democratic process with equal parts of public participation, individualism, pluralism, and capitalism, then the recommendation to submit the three environmental programs to the political process as an experiment in democratic choice should make sense and win widespread endorsement.

Respectfully submitted,  
Lawrenceville Environmental Advisory Committee

#### Notes

1. A. LOVINS, *SOFT ENERGY PATHS: TOWARD A DURABLE PEACE* 31-38 (1977); Tomain, *The Dominant Model of Energy Policy*, 61 *UNIV. COLO. L. REV.* 355, 373-76 (1990).
2. B. MCKIBBEN, *THE END OF NATURE* (1989).
3. DONELLA MEADOWS, DENNIS MEADOWS, J. RANDERS & W. BEHRENS, *THE LIMITS TO GROWTH* (1972); see also *THE CASSANDRA CONFERENCE: RESOURCES AND THE HUMAN PREDICAMENT* (1988) [hereinafter *THE CASSANDRA CONFERENCE*].
4. See Gibbons, Blair, & Gwin, *Strategies for Energy Use*, 261 *SCI. AM.* 136, 136 (Sept. 1989); Ruckelshaus, *Toward a Sustainable World*, 261 *SCI. AM.* 166, 167 (Sept. 1989).
5. *THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE* 8 (1987) [hereinafter *WORLD COMMISSION*]; see also *THE LEGAL CHALLENGE OF SUSTAINABLE DEVELOPMENT* (J.

Saunders ed. 1990); *STATE OF THE WORLD - 1991: A WORLDWATCH INSTITUTE REPORT ON PROGRESS TOWARD A SUSTAINABLE SOCIETY* (1991) [hereinafter *STATE OF THE WORLD*].

6. See *THE RESOURCEFUL EARTH: A RESPONSE TO GLOBAL 2000*, 46-47 (J. Simon & H. Kahn eds. 1984) (discussing economic growth along the traditional path); Watt, Craig & Auburn, *World Economic Modeling*, in *THE CASSANDRA CONFERENCE*, *supra* note 3, at 233-55 (discussing the limits to growth path); *WORLD COMMISSION*, *supra* note 5, at 49-54 (discussing a sustainable development path). *But see* Postel & Flavin in *STATE OF THE WORLD*, *supra* note 5, at 172 ("[S]ustainability can only be achieved by slowing and then stopping population growth and by reducing the material consumption of the world's fortunate.").

7. See generally Kaplow, *An Economic Analysis of Legal*

- Transitions*, 99 HARV. L. REV. 509 (1986).
8. J. TOMAIN & J. HICKEY, ENERGY LAW AND POLICY 26 (1989).
  9. S. BREYER, REGULATION AND ITS REFORM 15-17 (1982).
  10. Maler, *Welfare Economics and the Environment*, in 1 HANDBOOK OF NATURAL RESOURCES AND ENERGY ECONOMICS 3-60 (1985).
  11. See generally W. BAUMOL & W. OATES, THE THEORY OF ENVIRONMENTAL POLICY: EXTERNALITIES, PUBLIC OUTLAYS, AND THE QUALITY OF LIFE (1975).
  12. Kneese & Russell, *Environmental Economics*, in THE NEW PALGRAVE: A DICTIONARY OF ECONOMICS 159-63 (1987).
  13. Fuller, *The Forms and Limits of Adjudication*, 92 HARV. L. REV. 353, 394-404 (1978).
  14. M. WESSEL, SCIENCE AND CONSCIENCE 4-10 (1980).
  15. *Nuclear Waste Program: Hearings Before the Senate Comm. on Energy and Natural Resources (Part II)*, 100th Cong., 1st Sess. 129 (1987) (testimony of Dr. Frank Parker).
  16. Yellin, *High Technology and the Courts: Nuclear Power and the Need for Institutional Reform*, 94 HARV. L. REV. 489, 494-508 (1981).
  17. R. GOODIN, POLITICAL THEORY AND PUBLIC POLICY 187-210 (1982).
  18. R. POSNER, ECONOMIC ANALYSIS OF LAW 11-15 (3d ed. 1986); see also Posner, *Symposium On Efficiency as a Legal Concern*, 8 HOFSTRA L. REV. 487-91 (1980). But see Markovits, *Legal Analysis and the Economic Analysis of Allocative Efficiency*, 8 HOFSTRA L. REV. 811-903 (1980).
  19. R. POSNER, ECONOMIC ANALYSIS OF LAW 11 (3d ed. 1986). But see e.g., M. SAGOFF, THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT (1988) (rejecting willingness to pay as a proper method of evaluating environmental benefits); Tomain, *The Incommensurable Worlds of Economics & Politics*, 29 JURIMETRICS J. 333-348 (1989).
  20. W. BAUMOL & W. OATES, *supra* note 11, at 191-212.
  21. W. FISCHEL, THE ECONOMICS OF ZONING LAWS: A PROPERTY RIGHTS APPROACH TO AMERICAN LAND USE LAW 293-314 (1985).
  22. A. POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 12 (1983).
  23. See D. FARBER & P. FRICKEY, LAW AND PUBLIC CHOICE 38-62 (1991).
  24. *Id.* at 39.
  25. Heimann, *Project: The Impact of Cost-Benefit Analysis on Federal Administrative Law*, 42 ADMIN. L. REV. 545, 552 (1990).
  26. See generally Kaplow, *supra* note 7.
  27. As an alternative, we could adopt the Tiebout Model and say that the given level of clean streets is at the optimum and that people have properly valued clean streets by "voting with their feet" by moving into particular neighborhoods. See FISCHEL, *supra* note 21, at 292-315.
  28. See generally L. THUROW, THE ZERO-SUM SOCIETY (1980).
  29. Of course, funds must come from somewhere in the economy. Our point is that Lawrenceville will not have to reallocate its resources.
  30. A counterexample of a non-neutral point source policy would be forcing a public utility to clean the air to reduce the haze over an outdoor recreation area such as the Grand Canyon. See N.Y. Times, Feb. 2, 1991, at L10, col. 2.
  31. W. BAUMOL & W. OATES, *supra* note 11, at 201.
  32. A more sophisticated approach of imposing pollution control costs lies somewhere between government regulation and the free market. The town could create an emissions trading market where firms sell and buy entitlements to pollute. See, e.g., Clean Air Act Amendments of 1990, Pub. L. No. 101-549, 104 Stat. 2399 (1990).
  33. Corporations may find it profitable to reduce pollution on their own. See N.Y. Times, Feb. 3, 1991, at F1, col. 2.
  34. CHRISTAINSEN & TIETENBERG, *Distributional and Macroeconomic Aspects of Environmental Policy*, in 1 HANDBOOK OF NATURAL RESOURCE AND ENERGY ECONOMICS 345, 349 (1985).
  35. W. BAUMOL & W. OATES, *supra* note 11, at 197.
  36. J. TOMAIN & J. HICKEY, ENERGY LAW & POLICY 156-58 (1989).
  37. "The democratic values and processes that cost-risk-benefit analysis threatens are central to a free society. Although science does have a vital role in public decisionmaking, that role is defined by the democratic character of the American political system." Lovins, *Cost-Risk-Benefit Assessments in Energy Policy*, 45 GEO. WASH. L. REV. 911, 941 (1977).
  38. Kneese & Russell, *supra* note 12, at 161.
  39. Farber, *Environmentalism, Economics, and the Public Interest*, 41 STAN. L. REV. 1021, 1042 (1989).