

Land use regulation in the Lake George basin: an ecological economic perspective

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ABSTRACT

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This paper examines land use policy in Lake George, New York. In spite of a multitude of federal, state, and local regulations the environmental quality of Lake George has deteriorated significantly in recent years. We attribute this to a planning approach based implicitly on conventional economics. This approach is characterized by marginal analysis, exclusive reliance on discounted market values, and an emphasis on economic growth. We argue that an ecological economic approach explicitly recognizing the inherent conflict between economic activity and environmental protection is necessary to prevent further deterioration of the Lake George environment. We recommend a proactive planning approach clearly delineating the level of environmental integrity to be achieved and allowing this to be the governing factor in determining the permissible level of economic activity.

INTRODUCTION

Lake George is one of New York State's outstanding natural resources. Located in the Adirondack Park, it is widely known for its clear water and majestic setting. During the past few decades, however, rapid development has threatened the environmental and aesthetic integrity of the Lake George basin. Responding to development pressure and deteriorating water quality of the lake, a multitude of land use regulations has been put in place to protect the natural resources of the basin. In spite of the efforts

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of many state and local agencies and a multitude of regulations, environmental monitoring has shown a continuing decline in water quality and an acceleration in the eutrophication of the lake.

This study addresses the question of why the regulatory structure has been inadequate in protecting the environmental integrity of the Lake George basin. We examine land use policies in the basin in terms of conventional and ecological economic¹ approaches. We discuss the implications of each paradigm for environmental policy and resource management. We assert that regulatory failure in the Lake George basin is the result of a failure to recognize explicitly the inherent conflict between the goals of economic growth and environmental protection.

LAKE GEORGE

In 1791, Thomas Jefferson wrote to his daughter, "Lake George is without comparison the most beautiful water I ever saw. Its water is limpid as crystal and the mountain sides are covered with rich groves of fir, pine, aspen and birch down to the water edge" (Lake George Association, 1985, p. 7). The lake is approximately 51 km in length with an average width of 2.3 km. It is located on the southeastern edge of the Adirondack Park in northern New York State. Its Class AA special rating indicates that the water quality is excellent and it serves as a drinking water source for local communities. Lake George supports both a warm water (bass) and a cold water (salmonid) fishery.

In 1961, the New York State legislature created the Lake George Park, thereby "recognizing the unmatched natural beauty and recreation resources of the Lake George area". Lake George was recognized as "truly a critical environmental area of statewide and even national importance". The boundary of the park encompasses the entire watershed and is comprised of approximately 100 square miles² of state-owned land, 155 square miles of privately-owned land and 45 square miles of water surface.

With the construction of the Adirondack Northway in the 1960s the Lake George region became accessible to millions of people in the Albany, New York City, and Boston metropolitan regions. Significant resources were dedicated to developing recreational facilities such as campsites, boat

¹ We use the term "ecological economics" as defined by Costanza (1989) and Costanza et al. (1991). Ecological economics emphasizes the fact that the human economy is a subset of the natural world and stresses the importance of long-run environmental sustainability. By "conventional economics" we mean neoclassical theory and its many offshoots such as rational expectations.

² 1 square mile = 2.59 km².

launches, and a large bathing beach at the southern end of the lake. The large increase in disposable income in the upper income brackets during the 1980s contributed further to development pressure on the lake. By 1984, concern over these pressures became so great that a state task force was created to prepare a plan for the future of the basin. The findings of the Task Force for the Future of Lake George Park highlight many of the problems that threaten the environmental integrity of the lake (Task Force, 1987). These include:

(i) Inadequately controlled land development is taking place on sites with environmental and other limitations that either should preclude development or result in its substantial modification. The quality, or even the existence, of some critical environmental resources are threatened.

(ii) The scenic qualities of the shoreline and the mountainsides are being diminished as lands that formerly were open or forested are developed. An increasingly larger number of structures intrude prominently upon the natural landscape.

(iii) The quality of Lake George's world-renowned pure waters is deteriorating at an alarming rate. As the landscape becomes more developed, more nutrients and other pollutants are being carried directly into the lake by unmanaged stormwater runoff. Failing septic systems also are contributing to the problem.

(iv) The cumulative impacts of many small unplanned, uncoordinated public and private decisions affecting the natural and cultural resources of the Park are doing as much or more harm to the environment as the impacts of large-scale projects.

(v) The long-term economic consequences of allowing present environmental degradation to continue should be better recognized by local officials, business persons, property owners and other residents. Solutions require that men and women come to the fore who can exceed a narrow and short-range viewpoint and bring a broader vision to bear on the issues.

The effect of growth and development on the Lake George environment can be measured to a large degree by trends in water quality. Since 1980 the Rensselaer Freshwater Institute (FWI) has collected water quality data for Lake George. The results of these and other studies indicate significant deterioration of the ecology of the lake. Depletion of dissolved oxygen at depths greater than 25 m has been reported since 1984. The FWI has reported a considerable increase in the amounts of phosphorus and nitrogen in samples taken from the more urbanized southern basin of the lake. The southern basin also exhibits reduced transparency and higher concentrations of nutrients and pollutants. Late summer oxygen depletion is also found in the southernmost portion of the basin. Water samples from the southern basin show dissolved oxygen concentrations less than 4.0 ppm,

indicating the effects of inputs of nutrients and reduced carbon. This situation has resulted in an increase in algal productivity and a decline in transparency (FWI, 1990, p. 15).

A 1989 study of water transparency reported a significant deterioration in both the north and south basins (FWI, 1990). Carol Collins, a limnologist who has spent several years studying Lake George, attributes the decline in transparency to an increase in algae which feed off nutrients such as phosphorus and nitrogen. The abundance of algae is measured by the levels of chlorophyll present. Since 1980 the chlorophyll levels have increased every year throughout the lake and there is currently 60% more chlorophyll in the southern basin than in the less developed north. According to Collins, the most definitive measurement of human impact on the open waters of the lake is the level of chloride. Chlorides come from wastewater and building and road runoff. Since 1980 chloride levels have risen in Lake George by about 70%. According to Collins (1990):

High chloride, phosphorus, chlorophyll, algae counts and low silica levels and dissolved oxygen are a few of the parameters that are telling us the open waters of Lake George are suffering from cultured eutrophication. The startling fact is that over 10 years of monitoring we would have never expected to see any of these changes ... not in 100 years.

Figure 1 shows the relationship between phosphorus levels near the shore of Lake George and land use. The greatest impact is from commercial use, with undeveloped shorelines showing the least amount of contamination (Collins, 1990). The data show that pollution levels near the shore far exceed those measured in open water.

Development also contributes to the loss of scenic views. Noise produced by cars and power boats also disturbs the natural peace and solitude. The latest controversy has centered around the use of jet skis. The loss of privacy is hard, if not impossible, to measure correctly. However, such losses are real in terms of the negative effects on real estate values and in

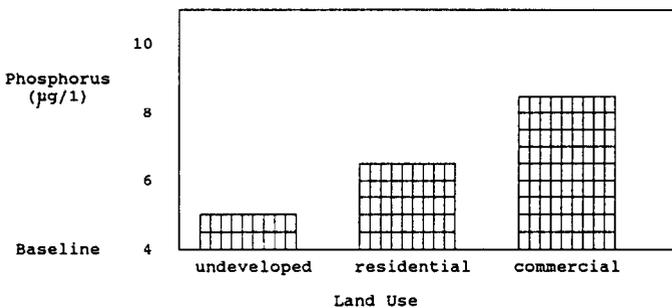


Fig. 1. Near shore phosphorus and associated land use.

lost quality of wilderness experience. The 1987 Lake George Task Force report concluded, "all the evidence suggests that water quality can be expected to deteriorate incrementally in response to ongoing development pressures in the Lake George Park".

LAND USE REGULATION IN THE LAKE GEORGE BASIN: ECONOMIC VERSUS ECOLOGICAL GOALS

The Lake George basin falls within a number of state and local jurisdictions; a complex web of regulatory controls has evolved to guide development and reduce environmental impacts. Regulatory agencies involved at the state level include the Adirondack Park Agency, the Office of General Services, the Lake George Park Commission, and the Departments of Environmental Conservation, Health, and Transportation. The State Environmental Quality Review Act (SEQR) also governs some types of development projects. Additionally, the Lake George basin is governed by three counties and thirteen different municipal bodies.

As might be expected with so many players, the regulatory process is characterized by a duplication of effort and contradictory policies. The deterioration of the Lake George environment is due to a variety of interrelated "failures". Among these are (1) market failure — the failure of the market to ensure the socially optimal resource allocation due to the presence of incorrect price signals, (2) information failure — a lack of knowledge about the true economic value of resources, and (3) intervention failure — public policies that promote non-optimal resource use.³

The regulatory goals of all the agencies involved in land use regulation in Lake George embody a commitment to preserving the natural resources of the region. SEQR, for example, recognizes an obligation to "protect the environment for the use and enjoyment of this and all future generations", thus explicitly encouraging long-term environmental sustainability. At every regulatory level however, decision-makers are directed to weigh this obligation against economic considerations. The Lake George planning board, for example, is directed to take into account "commercial, industrial, residential, recreational or other benefits that might be derived from the project". SEQR calls for decision-makers to give protection of the environment "appropriate weight" with social and economic considerations. The Adirondack Park Agency must weigh protection of natural resources with the need for growth, employment, and a strong economic base.

³ These issues are discussed in depth by Pearce and Turner (1990) and by Turner (1991).

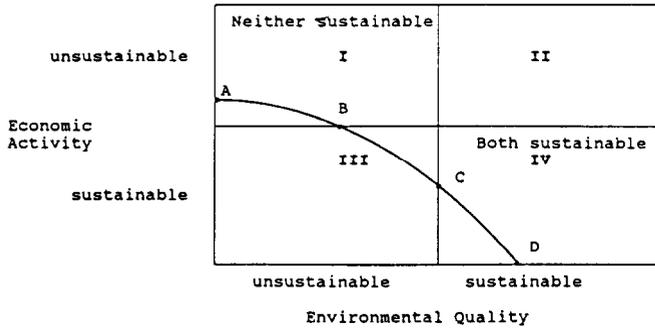


Fig. 2. Tradeoffs between economic activity and environmental quality.

Figure 2 illustrates the trade-off between economic activity and environmental quality. The line ABCD represents the feasible set of economic activities and the corresponding level of environmental quality. Point A represents the maximum level of economic activity with a correspondingly low level of environmental quality. This point is not economically nor environmentally sustainable over time as it ignores the limits to growth imposed by the assimilative capacity of the environment and governing resource constraints. It also ignores the positive effect of environmental amenities on the Lake George economy. Point D represents the maximum level of environmental quality where natural systems are uninfluenced by economic activity and remain in a pristine state.

Point B represents a sustainable level of economic activity. At this point, economic activity may be sustained through time, but at the cost of a continual reduction of environmental quality. Point C is defined by the ecological carrying capacity of the Lake George basin. Factors determining the ecological carrying capacity include the level of nutrients the lake can assimilate without accelerating the eutrophication process, preservation of biodiversity, and preservation of the scenic beauty of the area. Since the level of economic activity at point C is determined by the capacity of the environment to absorb waste, it represents an environmentally sustainable level of economic activity.

Only points in quadrant IV in Fig. 2 are both economically and environmentally sustainable. The problem for the environment is that it is quite possible to have an *economically* sustainable economy at a point somewhere between B and C in quadrant III in Fig. 2. The economy may prosper as measured by standard economic indicators, but the environment will deteriorate. Even a perfectly operating market economy with all externalities internalized would most likely bring the economy to a point somewhere between B and C.⁴ Indeed, the economy of the Lake George

area experienced its greatest period of economic growth in the 1980s when the water quality of the lake showed its most rapid decline.

Some will object that there is no absolute trade-off between economic activity and environmental quality. We recognize that the trade-off is complex, represented by Paul and Anne Ehrlich's (1990) equation $I = PAT$, the impact of human activity is equal to (population) \times (affluence) \times (technology). Even if one accepts the argument that it is theoretically possible for the economy to grow without an adverse impact on the environment, in reality this almost never happens. With few qualifications there is a negative relationship between the level of economic activity and environmental quality (Gowdy, 1992; Tisdell, 1991).⁵

Values concerning aesthetics, the quality of life, and stewardship of nature may shift the desired level of economic activity down along curve AD to somewhere between point C and point D. If the overriding goal is truly preserving the natural environment through time, as stated by the New York State legislature in creating the Adirondack Park and the Lake George Park, then the level of economic activity allowed at point C should not be exceeded. That is, economic activity should be constrained to an ecologically sustainable level. If the word "sustainable" refers to preserving ecological integrity then environmental constraints should be the overriding factor in land use decisions. Rees (1988, p. 283) writes:

Sustainable development requires a proactive planning approach in which ecological integrity is the governing factor and the permissible level of economic activity is the dependent variable.

If the goal of land use regulations for Lake George is to promote environmental integrity, that is, to achieve point C in Fig. 2, existing regulations and policies are unclear as to how decision-makers can and should achieve this. Contradictions in the mechanisms provided to implement the goals and how they are actually applied tend to undermine efforts to achieve point C. Point B, or even somewhere between points A and B, becomes the goal by default.

In addition to the ambiguous and at times contradictory delineation of goals there is also a lack of guidance and information as to how environmental costs and benefits should be valued. SEQR, the Adirondack Park

⁴ Even neoclassical economists such as Tietenberg (1988, p. 495) point out that the nature of private decision making in a market economy, namely the existence of a positive discount rate, makes environmental sustainability an economically "irrational" goal. See the excellent summary of this issue by Norgaard and Howarth (1991).

⁵ Cleveland et al. (1984) found a very close relationship between economic activity and energy use for the U.S. economy. Energy use is related to some of the most serious environmental problems facing us, including acid rain and the build-up of greenhouse gases.

Agency Act, and the regulations of the Town of Lake George, delineate what environmental factors should be considered. SEQR requires that an Environmental Impact Statement (EIS) should include everything from a description of the project to analysis of environmental impacts, alternatives and mitigation measures. Once the impacts are outlined they are to be given "appropriate weight" under SEQR. The town regulations are similarly vague in directing the planning board not to approve a project unless the project "would not have an undue adverse impact" on the natural environment.

Environmental benefits and costs are for the most part not properly understood or valued. It is unclear then how the decision-making body would give them "appropriate weight". Economic benefits, however, are quantified easily and universally understood. People come to rely on the common denominator of economics. Bern (1990, p. 568) writes:

Whether we examine political, social or religious practices in a system founded on free-market capitalism, none is as universal as economic enterprise. Economic analysis serves as the dominant basis of decision making for practical reasons. Most individuals must face, and therefore become familiar with, decision making based on economic considerations.

Reliance on the familiar common denominator of economic profit emphasizes short-term economic gain and undermines noneconomic values. Pearce and Turner (1990) argue that there is a "misplaced concreteness" whereby the things that can be measured appear to be more important than those which cannot be measured. There is also an inherent benefit optimism on the part of planners and developers.

Local zoning ordinances and the APA land use plan set allowable use and density guidelines and are the primary tools given to decision-makers to implement regulatory goals in the Lake George basin. Ultimately, for reasons of legality and practicality, decision-makers rely on the town's Comprehensive Development Plan and the Adirondack Park Land Use Plan to set the standards for the amount of allowable development. Given an ambiguous delineation of goals and inadequate implementation mechanisms, the decision-making process falls back on standard economic criteria. Three characteristics of conventional economics place this paradigm in direct conflict with the notion of environmental sustainability. These are: the exclusive reliance on (discounted) market values, the promotion of economic growth, and the incremental nature of the decision-making process.

Exclusive reliance on market values

Although the regulatory structure in the Lake George basin aims at protecting public goods and reducing externalities, intervention failure

arises as standard economic criteria are applied to grant variances. One such criterion for granting land use variances, outlined in Lake George's Zoning Ordinance, is that the land cannot yield a reasonable financial rate of return if used as zoned. Although the zoning regulations do not define "reasonable rate of return", testimony presented by various applicants to the planning board shows that it is based solely on the private development costs and benefits. Social costs such as increased congestion or the loss of scenic views are not taken into account. Although required mitigation measures do internalize some of the externalities by imposing costs for requirements such as stormwater and wastewater management, existence and option values needed to determine total economic value are neglected. For instance, in one case before the Lake George Planning Board the developer indicated that the major selling point of his project was the spectacular views. Construction of the project would necessarily mean that scenic views would be compromised or eliminated for someone else, but this was not taken into account in the environmental assessment.

Conflicts arise as decision-makers are called to take a long-term view, yet economic considerations are evaluated within the standard economic framework which discounts future environmental benefits and overvalues economic benefits. It is easier to determine what the optimum economic value is by stressing the right to a reasonable rate of return on land than it is to quantify environmental values. Decision-making criteria are by default based entirely on traditional economic criteria.

Even if the environmental costs of a development project are "correctly" taken into account, the process of discounting the benefit and cost stream favors large, immediate economic benefits over small, but lasting environmental costs. With even a fairly small discount rate the present value of future environmental benefits all but disappears after a few years. Hall (1991, p. 513) writes:

The use of a discount rate means that a one time gain of a thousand dollars today will be weighed more heavily than tens of thousands of dollars gained slowly over a long time ... So neoclassical analysis will always argue for the destruction of nature when short-term profits can be made, even at the expense of much greater gains over long periods. Government policies based on such economic techniques will deprive its citizens and their children much future economic well-being.

Economic growth as public policy

Implicit in standard economic theory is the notion that unlimited economic growth is both feasible and desirable (Daly, 1977). Although the regulatory structure in the Lake George basin embodies a commitment to protecting natural resources, the land use plans developed to implement

the regulatory goals ultimately reflect the standard economic proclivity toward growth. Development plans for the Lake George basin allow for an overall level of development that is incompatible with the goal of environmental sustainability. As long as the emphasis in development plans is on economic growth, then land use regulations will merely serve to modify the worst environmental abuses, not to set a level of economic activity that is consistent with a stable environment.

Incremental decision making

Mirroring the neoclassical description of a market economy, the public decision-making process proceeds incrementally from project to project with little or no consideration given to the overall level of development. Daly (1985) compares the standard marginal approach to the problem of maximizing the load a boat can carry. Maximum weight can be carried by equalizing the load throughout the boat. Marginal decisions are made by an allocative mechanism that equally distributes the weight. What is lacking is a notion of scale, an idea of how much weight the boat can carry. The price system operates as a distribution mechanism with no criterion as to how much economic activity is compatible with a finite environment. The planning process is for the most part reactive to market forces; planning decisions are made in response to development proposals. The marginal nature of private market decision is mirrored in the planning process.

CONFLICTS IN GOALS — THE CASE OF GREEN HARBOUR

The conflict between the standard and ecological economic approaches to land use regulation can be clearly seen in an examination of a particular development project in the town of Lake George, the planned resort housing community of Green Harbour. The Green Harbour project was approved by the Town of Lake George Planning Board in May 1987 after years of debate by all the various layers of governmental agencies. The evolution of land uses at the project site provides valuable insights into how the incremental implementation of the regulatory process (the means) may ultimately conflict with the goal of environmental sustainability of Lake George.

The Green Harbour parcel consists of about 94 acres ⁶ of land on the west side of Lake George (see Fig. 3). The land was used as a single-family dwelling site until 1968 when new owners began using it as a private

⁶ 1 acre = 0.4047 ha.

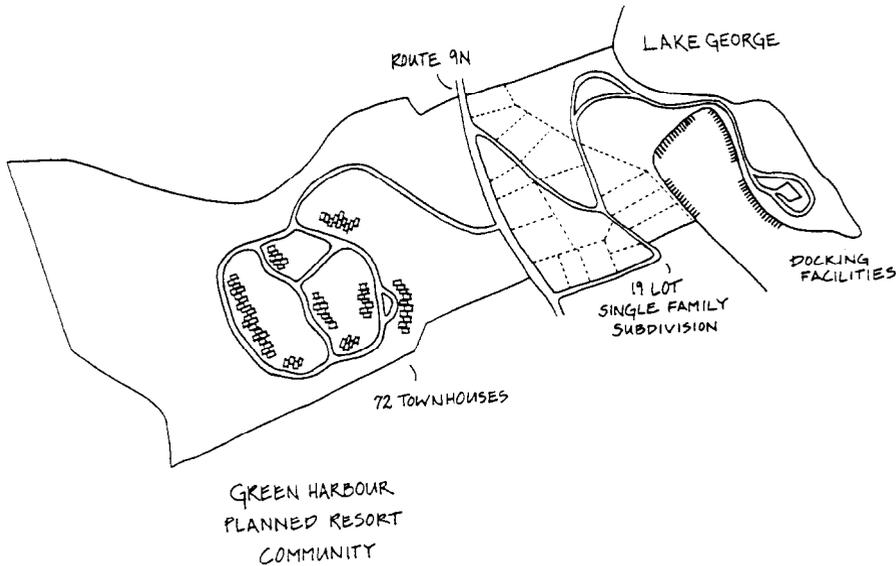


Fig. 3. Sketch of Green Harbour showing phases.

recreation area. By 1976, 38 docks were constructed on the property. Twenty-two of these docks predated a 1972 state law governing wharves and marinas. In 1976 the Town of Lake George notified the owners that the existing docks were in violation of the Town of Lake George Zoning Ordinance and recommended that they apply for a use variance for the operation of the boating facility. At a public hearing held in April 1976, a variety of concerns were raised about the boating facility. The Lake George Association and the Lake George Park Commission argued that since no variance had been requested before 1972, the docks represented an illegal non-conforming use and should not fall under the provisions of the grandfather clause in the 1972 Zoning Ordinance. Other concerns were expressed over boat congestion, oil and gas spills, deterioration of water quality, impacts on wetlands, and the elimination of wildlife (see Olsen, 1991).

Legal representatives of the owners argued for granting the variance on the grounds that the property was otherwise undevelopable. The minutes of the public hearing state that the owners originally hoped for a three- or four-lot subdivision, but stringent sewer regulations precluded this possibility. The docking facility was built instead "in order to meet the expenses of the property" (Town of Lake George Zoning Board of Appeals, Public Hearing, April 1, 1976, p. 2). On April 7 the Zoning Board of Appeals granted a use variance using the "unnecessary hardship" clause of the zoning ordinance. To invoke this clause three conditions must be met: (1)

the land in question cannot yield a reasonable return if used only for a purpose allowed in the zone, (2) the plight of the owner is due to unique circumstances and not to the general conditions in the neighborhood which may reflect the unreasonableness of the Ordinance itself, and (3) the use to be authorized by the variance will not alter the essential character of the locality. Although hardship was established by claiming that the land was "undevelopable", the formal variance approval did not reflect this by incorporating a condition that the development rights had been pledged.

In spite of the 1976 decision to grant a hardship variance based upon the undevelopability of the project site, the owners appeared before the Lake George Planning Board in June 1979 requesting approval for a 12-lot subdivision at Green Harbour. Because of poor soils there would be no subsurface sewage disposal, rather each home would be equipped with effluent holding tanks that would be pumped out about every 10 days. Planning Board minutes (April 4 1979, June 5 1979, August 7 1979) reflect concern by board members and residents over erosion during construction, drainage problems, driveway access and high groundwater. The transcript of remarks made during a public hearing on August 7, 1979, reflect the growth versus the environment conflict:

Mr. Frederick Denham stated, 'I know you can't stop progress, it's all around us; you see it everywhere and it has led to the deterioration of the lake and I'm sure you will agree that it will lead to further deterioration of the lake. I can vouch for it personally because we have been pumping water out of the lake and I can't use it anymore ... this is all brought about by more people coming in, and I say you can't stop progress, but I think this lake has deteriorated and I don't know if it can ever be brought back. I rather doubt it, but what is happening and what continues to happen just furthers this deterioration. Chairman Clancy stated we realize what the problems are and we have gone from 15,000 square feet to 20,000 square feet ⁷ in terms of lot size, which is a 33% increase, have tried to keep the green areas larger; we have a cutting provision in terms of trees in our Land Use Plan which we never had before ... I think we are trying to live with the idea that the community of Lake George is growing and we are trying to balance that within the framework of ecology in the area.' Mr. Frederick Denham stated, 'it just seems unfortunate that things have deteriorated and you and I know it all goes back to the old 'buck'; you people want the dollar to come in and this is the result.'

Final approval of the 12 lot subdivision was granted at the August 7, 1979, Planning Board meeting. In June 1981, approval was granted for a modification of the sewage disposal plan whereby each lot would have an individual septic system that would be pumped to a community sewage disposal system. In July 1982 the subdivision of five additional lots was approved; the project now totaled 19 units.

⁷ 1 square foot = 9.29 dm².

In December 1984 the owners again came before the planning board with a proposal for the Green Harbour Planned Resort Community to include single family houses on the previously approved 19 lot subdivision on the east side of Route 9N, 72 townhouses on the west side, continuance of the existing docking facilities, a community center, swimming pool, and tennis courts. This proposal required an area variance from the zoning board (in order to cluster the townhouses) and a use variance to locate part of the project in a residential-rural zone. Approval was also needed from the planning board to modify the existing proposal. SEQR approval was also required because the project involved the construction of more than 50 residential units.

Although no SEQR determination had been imposed by the February 1985 planning board meeting, the applicant requested that the board decide "as soon as possible" whether to grant an alteration to the subdivision previously approved. The planning board set a public hearing date, but informed the applicant that it would be subject to cancellation if the Environmental Assessment Form (EAF) indicated that an environmental impact study of the entire project was necessary. The Lake George Association argued that consideration of the alteration before an EIS had been completed would constitute segmenting the project into less significant component actions and would undercut the intent of SEQR which requires consideration of the cumulative impacts of a project. The developer argued that the proposed use of the property was the best in terms of the economic, environmental, and aesthetic impacts when compared to other types of uses that are allowed within the same zone. This line of reasoning is commonly used to argue the benefits of a particular project. Instead of assessing a project on its own merits, decision-makers are pressured to compare it to the potential impacts of other allowable uses.

The planning board voted to accept the application and preliminary plans in May 1985 and recommended that the use and area variances be accepted by the zoning board. However, it was not until December of 1985 that an environmental impact statement was completed and formally accepted. The information contained in the Green Harbour EIS illustrates the shortcomings of a planning process implicitly based on notions of marginality and trade-offs. The Green Harbour EIS argued that the project would produce a large net gain in revenue for the municipality. Economic impacts included a large increase in tax revenue, an increase in retail trade, and the creation of several new jobs.

Applicants are required in the EIS to assess, among other things, the impact of their project on the environment and the use of scarce resources. Typical of the assessment of the environmental impacts of the Green Harbour project is the following:

Impacts to the harbor may well improve with the implementation of the proposed development. All boaters will have permanent homes on the site in which to live. Good sewage disposal and solid waste disposal facilities will exist. There will be no need for users to live on their boats for the duration of their stay. This will assist in reducing user pressure on the harbor.

The assessment required by the EIS of “irreversible and irretrievable commitment of resources” is equally innocuous:

Construction of the Green Harbour development will result in the permanent commitment of raw materials such as concrete, steel and wood, in addition to energy resources required to operate construction equipment. These resources, however, are in reasonable supply in Warren County.

The final decision approving the Green Harbour Project, delayed in part by a building moratorium, was made in May 1987.

A critique of environmental assessment in Canada made by Rees (1988) could have been written about Green Harbour. Rees argues that the failure of the assessment process,

... can be ascribed to the principal of self-assessment and the conflict of interest it implies (proponents initiate the process and prepare the EA document), the growth-oriented ideology of most governments, the low political status of environmental issues, and, at least in Canada, excessive political discretion in invoking the process and an institutional framework that seems designed to circumvent political accountability.

Even though the issue of environmental sustainability was discussed at virtually every stage of the planning process, policy-makers were stymied by a lack of specific guidelines and an overriding emphasis on economic benefits. The most important document to guide planners, the environmental impact statement, was prepared by the developers and consistently promoted the project while de-emphasizing any environmental or aesthetic impacts. The impact of many “Green Harbours” on Lake George has been to lower water quality, increase congestion and, in general, to overwhelm the carrying capacity of the basin.

An important issue here, beyond the scope of this paper, is who benefits from development projects and who pays the social costs of such projects (Hall, 1991). Neoclassical theory has little to say about distribution. The movement toward Pareto optimality starts from a given amount and a given distribution of resources. The Pareto criterion moves an economy to an efficiency frontier, but offers no guide as to which point on the frontier (which distribution) is best. More development around Lake George means more income, but this may have little impact on the people living there. The social costs, on the other hand, are largely borne by existing residents.

POLICY RECOMMENDATIONS

A complex regulatory structure has evolved in the Lake George basin in an attempt to remedy market failures that lead to environmental degradation. These traditional approaches, such as land use regulations that set density and use specifications and wastewater and stormwater management requirements, attempt to internalize externalities and control the use of public goods. The degradation of natural resources continues, however, as documented by the accelerated eutrophication of Lake George and rising concerns over aesthetic impacts and overcrowding. This intervention failure arises because the regulatory structure is based upon and influenced by traditional economic principles that are contradictory to promoting long-term sustainability of natural resources as emphasized in ecological economics. Ecological economics recognizes the inherent conflict between economic activity and environmental protection, while conventional economics does not.⁸ There seems to be a consensus developing that a dual approach is needed to address the question of environmental sustainability (Daly, 1990; Norgaard and Howarth, 1991). Separate criteria should be established for environmental and economic goals in development projects (Lind, 1990; Pearce and Turner, 1990). The major recommendation of an ecological economic approach, then, is to adopt a proactive planning approach by clearly delineating the level of environmental integrity to be achieved and allowing this to be the governing factor in determining the permissible level of economic activity (Heuting, 1987; Rees, 1988).

Since the Lake George basin lies within the Adirondack Park, which has been recognized by the New York State Legislature as a significant natural resource worthy of preservation, and the lake itself has also been determined to be a significant natural area, it is clear that the overriding public goal is environmental preservation across generations. It is important for policy-makers to recognize, however, that the current regulatory structure has sanctioned economic growth as the primary goal for the region. If this continues it is certain that the natural beauty of Lake George will eventually be lost. Once environmental sustainability is clearly stated as the overriding goal, ecological economics offers a framework for implementing policies for long-term sustainability.

First, as Pearce et al. (1989, p. 21) stress, efforts to integrate environmental values into project appraisal should be greatly strengthened in

⁸ Lake George is really a micro laboratory for the economic growth-environment conflict. The blatantly contradictory statements made by political leaders on this question have been discussed by Ehrlich and Ehrlich (1990), Hueting (1990) and Gordon and Suzuki (1990) among others.

terms of understanding detrimental environmental effects and placing a value on them. Combining clearly defined goals with more adequate valuation of impacts upon natural resources will increase the ability of decision-makers to give "appropriate weight" to environmental protection and to recognize potential "undue adverse impacts".

Second, decision-makers need to take a long-term view and abandon marginal evaluation and assess the cumulative impacts of development. The Lake George Park Commission provides a vehicle for evaluating land use plans on a regional level by assessing the cumulative impacts of overall allowable densities. In recognizing the carrying capacity of the basin, a sustainability constraint should be imposed (Pearce and Turner, 1990; Daly, 1990; Norgaard and Howarth, 1991).

Third, a long-term planning horizon should be reinforced by re-evaluating variance provisions that recognize that the "right" to a reasonable rate of return neglects the true social cost of development.

Fourth, by adopting an ecological economic perspective that recognizes there are limits to growth imposed by resource constraints and the assimilative capacity of the environment, policy-makers will be better prepared in developing land use plans that set limits to the amount of development that should be allowed in the Lake George basin. A steady-state economy as defined by Daly (1977) with a rate of throughput that is below the tolerable thresholds of depletion and pollution is a concept that is appropriate for a region that is considered to be one of the nation's most precious natural assets. By embracing environmental sustainability, the focus shifts from economic growth as narrowly construed in traditional economic policy to development of the quality of life rather than real incomes alone (Pearce et al. 1989, p. 21; Cumberland, 1990).

Fifth, in the final analysis, if policy-makers do decide that point C in Fig. 2 is the ultimate goal, it will not be enough to merely adopt ecological economic principles for future planning. As the current regulatory structure has today led us somewhere to the left of point C, measures are needed to either reduce the current level of economic activity and move use down the curve to point C or to change the type of economic activity, thus shifting the entire curve up. The practice of grandfathering nonconforming projects needs to be reconsidered. In addition, new mechanisms that are applied such as impact fees or transfer taxes should take into account not only economic impacts such as school and infrastructure costs, but also true environmental costs as well.

Finally, decision-makers and the courts must realize that the value of preserving this unique natural asset, either for its own sake or for human enjoyment, will not be embodied fully in economic analysis. It is up to decision-makers to exercise the discretionary provisions granted to them in

the regulations and pick up where simple cost-benefit analysis leaves off. Irreversibility tells us that it would be more prudent to err on the side of conservation than risk losing an irreplaceable resource forever.

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