

Sustainable Development and the Adirondack Experience

BY JON D. ERICKSON

The vision of the Adirondack Park as a working model of sustainable development has found appeal across many audiences. Within the Adirondack Research Consortium (ARC) this theme has been played out at annual meetings, informal gatherings, and Internet discussion. For instance, at the ARC's *Third Annual Conference on the Adirondacks*, participants learned of the distinction of the Adirondacks in the international conservation arena (Weber, 1996), the application of Park policy to conservation efforts in the Lake Baikal watershed of Siberia (Ecologically Sustainable Development, 1996), and a hopeful message from the Adirondack experience set in a contrasting world of extravagant material wealth and desperate poverty (McKibben, 1996a). McKibben (1995), Schneider (1997), and others have looked to the Adirondacks for hope and lessons towards finding compromise between economic development and environmental protection. Indeed, a guiding theme of this journal is "promoting sustainable development within the region broadly defined as the Champlain-Adirondack Biosphere Reserve" (Chilson and Vinopal, 1994).

Concretely defining the meaning and mechanics of sustainable development has been much more difficult than its wholesale promotion — and not just in the Adirondacks. For 10 years since the

World Commission on Environment and Development's report on *Our Common Future* (1987; the Brundtland report), sustainable development has been the cliché of choice among governments, non-government-organizations (NGOs), private businesses, and educational institutions alike. It has been touted as no less than a guiding concept to social evolution, yet has been berated again and again for a lack of operational, policy-oriented recommendations. The current trend in use (or overuse) has perhaps done more to dilute the concept than support it as a rallying cry.

The purpose of this paper is to define and evaluate principles of sustainable development as they relate to the experience of the Adirondack Park. If a century-old experiment (as it has been deemed by many) with development and conservation in the Adirondack region is to be used towards defining, evaluating, and even prescribing this elusive concept, then it is crucial to question and explore the evolution and dynamics of sustainable development. For example, what does sustainable development require from a rural landscape at the social, economic, and environmental levels? More specifically, are there initial and ongoing conditions that both emerge from and support sustainable development in the Adirondacks? And, ultimately, what does the experience to date in the Adirondacks offer in the debate over economic growth and quality of life? Through the Adirondack prism, a complex picture emerges of regional sustainable development, consequences of its partial adoption, and lessons from its application.

Sustainable Development

Defining sustainable development is a lesson in extremes. Table 1 is a sample of the range of interpretations. The Nobel Laureate Robert Solow perhaps best summarizes the traditional economic perspective on sustainable development as a matter of intergenerational equity — providing opportunities similar to those our generation enjoyed to our children and grandchildren and ad infinitum. Equity is defined in terms of maintaining current levels of material consumption. Given capital depreciation (human-made and natural), this version of sustainable development requires each generation to invest in capital stock and environmental resources, i.e. GROWTH. Outside academics, the business, government, and development agency perspectives of sustainable development also cling to a doctrine of economic growth. They advocate lower impact growth as the solution to our environmental problems. A technological savior is implicit in this perspective, in which growth leads to technology, which leads to reactive solutions to any mounting environmental threats. The international development agency perspective adds an emphasis on intra-generational distribution, or distribution between rich and poor nations.

At the other end of the spectrum, the academic-transdisciplinary perspective argues for limits to our quantitative growth — a vision of sustainable development as living within an environmental carrying capacity. This position emphasizes the importance of a transdisciplinary, evolving perspective on a balance between human desires and ecosystem limits. The

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impossibility of unfettered growth in material consumption is implicit, and qualitative change in human welfare is sought instead through improvements in the quality of life.

The two extremes on the interpretation of the requirements of sustainable development — economic growth versus limits to growth — are part of an ongoing debate between what has been defined respectively as “weak” and “strong” sustainability (see for example, Turner et al., 1997 or O’Hara and Gowdy, 1997). Weak sustainability requires investment in capital to maintain standards of living. Perfect substitution between natural capital (forests, streams, oceans, climate, etc.) and human-made capital (technology, buildings, machinery, etc.) is assumed. Under weak sustainability, scarcity in one resource can be overcome by substituting one for another. For instance, as we continue to deplete our natural fisheries, we simply switch to fish farms; as the ozone layer depletes, we simply launch reflective mirrors into orbit; as species go extinct, we simply save their images in virtual reality zoos, and their genes in cold storage.

Examples of weak sustainability, and their environmental implications, are

increasingly under scrutiny. For instance, McDaniel and Gowdy (1999) have studied the South Pacific island nation of Nauru. Barely 20 kilometers in circumference, this island has a relatively high per capita income level of \$10,000. At the heart of their “economic” success is a century-long depletion of the island’s rich phosphorus deposits (through colonialization early on, and more recently through independent ownership). Mining operations have devastated the center 80% of Nauru, successfully transforming the island’s natural capital into resident and foreigner monetary wealth. In fact, future generations could feasibly live off investment income and maintain a high material standard of living, as long as resources are imported that are no longer sufficiently supplied on the island (i.e., food, water, and other necessities). Thus the requirements of weak sustainability are fulfilled. Under similar reasoning, might the metropolitan islands of New York City or Chicago or Los Angeles be weakly sustainable? What if the “island” is expanded to the state, national, continental, or global level? When are the limits to substitution between natural and human-made capital reached?

In contrast, strong sustainability

argues that market goods can not substitute for all non-market goods, particularly within a well-defined closed system or geographic region. For instance, at the global level there is no substitute for a stable climate, a safe water supply, unpolluted soils, biodiversity, or simply the experience of a real walk in the real woods. Under strong sustainability, humans can grow too big and the scale of total economic activity will determine the ultimate success of our development path.

There is growing scientific consensus that under the criteria of strong sustainability we are rapidly approaching, or have grown beyond, a planetary scale carrying capacity. For instance, over 40% of land surface has been transformed for direct human-use, over half of all accessible surface fresh water is in use, and approximately 60% of terrestrial nitrogen fixation is human-caused (Vitousek et al., 1997). An average 150 pound American is creating annually 287 times his/her weight in carbon dioxide emissions, 13 times his/her weight in solid waste, and consuming 48 times his/her weight in coal (Erickson, 1998). Global deforestation rates are in the range of eighty-thousand square miles per year, and species extinction is occurring at a minimum of

Table 1. Perspectives on Sustainable Development (Erickson, 1998).

Perspective	Sustainable Development as:	Key Concepts	Source
Academic - Transdisciplinary	“... sustainable scale of economic activity within the ecological life-support system.”(p. 521)	Carrying capacity, sustain welfare, environmental quality	Arrow et al., 1995
Academic - Neoclassical Economics	“... (endowing future generations) with whatever it takes to achieve a standard of living at least as good as our own and to look after their next generation similarly.” (p. 15)	Intergenerational equity, capital investment	Solow, 1992
Business	“... integrat(ing) environmental considerations into our operations and into our long-range planning ...” (p. 2)	Sustainable Growth	Kennedy, 1992
International Development Agency	“... a new era of economic growth, one that must be based on policies that sustain and expand the environmental resource base.” (p. 1)	Sustainable technological progress, no absolute limits, intragenerational equity	World Commission, 1987
Government	“... policies that encourage economic growth, job creation, and effective use of our natural and cultural resources.”	Good economic policy protects the environment and good environmental policy strengthens the economy	White House, 1993

30,000 species a year, or 120,000 times above what is considered normal, or background, extinction of one species lost every four years (Leakey and Lewin, 1995).

Examples of living within limits, or strong sustainability, are more difficult to find. Human populations and their accompanying resource demands continue to grow world-wide. The wastefulness of material consumption in the developed world and the desperateness of subsistence consumption and population explosion in the developing world continue to impact all corners of the globe. The summit of Mt. Everest is littered with the oxygen tanks of its human conquerors. The ocean floor is beset with nondegradable plastics for eternity. And as McKibben (1989) soberly informed us nearly ten years ago, our impact on the climate has completed our brief quest for total planetary domination.

It is within the search for a way to cope with our impact, to redirect its course, and to sustain ourselves within the limits defined beyond human innovation, that the Adirondack experience enters center stage.

A Park Called Home

In the Adirondacks, through open space protection and land use planning, "wilderness" is given a place in our craze for material consumption. It deserves repeating that ninety percent of "all wilderness east of the Mississippi and north of the Mason-Dixon line lies in the Adirondack Park" (Schneider, 1992). The one hundred-year-old Park, at close to six million acres, is the largest park in the lower 48 states. Land protected by the New York State Constitution accounts for 47% of the acreage, with the remainder zoned for compatible private uses and regulated under the authority of the Adirondack Park Agency. The vast biological and recreation resources include 2,800 lakes and ponds, 1,200 miles of rivers fed by 30,000 miles of brooks and streams, 42 peaks over 4,000 feet, and 2,000 miles of trails (APA, 1996). The Park's current large, protected, rural, and

wild character has created the conditions for species preservation and re-establishment, including the moose's natural return, successful reintroduction of the bald eagle and peregrine falcon, and discussions of wolf and elk reintroduction.

Thus, the sheer size of the region, diversity of natural resources, and inclusiveness of a geologically defined ecosystem (the Adirondack dome) create a credible starting point when discussing strong sustainability. However, it is the inclusion of human communities within a protected ecosystem that most often compels consideration of the Adirondacks as a potential regional model of sustainable development. While over 2.7 million acres are preserved as "forever wild," the Park is home to 130,000 permanent residents in 105 towns and villages, hosts 75,000 seasonal occupants, and is within a day's drive of over 60 million people (APA, 1996). Wilderness preservation isn't sought to the exclusion of human communities and economic activity. Rather, economy and ecosystem are integrated in a model of strong sustainability.

The character of this integration is at the heart of understanding both the design and consequences of sustainable development initiatives within the Adirondack region, and perhaps beyond the Blue Line. To begin, consider the component most critical to a concept of sustainable development within the Adirondacks: open space protection. To protect such a large mix of public and private land, the Adirondacks have evolved into an approximation of more theoretical models of multiple-use planning. The main model to influence original development intensity and use zoning in the Park originated in the discipline of landscape architecture. The Private Land Use and Development Plan (Adirondack Park Agency, 1973) set forth a comprehensive system of development zoning based, in principle, on a system of natural resource, historical, and site development considerations. The capacity of land to withstand development and the impact of development on watershed, viewshed, wildlife, and recreation goals, were central to the

drafting of the Use Plan. These principles stemmed from an ecological land-use perspective based on Ian McHarg's seminal work *Design with Nature* (1969) (see also, McHarg and Steiner, 1998). In the McHargian tradition, land characteristics were to be inventoried, and development in the Park was to be based on site specific constraints (for example, slope, soils, water impact) as well as landscape goals (for example, natural beauty, watershed protection, recreation access). The resulting map to the Use Plan (the most recent revised on February 10, 1996) evolved into a system of concentrated development, linked via transportation corridors, buffered by natural beauty, and designed to protect water, wildlife, and recreation resources. For public land, the APA was also responsible for writing the State Land Master Plan, a comprehensive zoning based largely on a system of recreational use intensity.

During the 1980s, a new model of land-use planning emerged from the discipline of conservation biology (Noss, 1983; Harris, 1984; Noss and Harris, 1986; Noss, 1987). This more recent multiple-use framework to landscape design is a near mirror image of the McHargian model. It provides a useful barometer towards evaluating where on the scale of sustainable development — from weak to strong sustainability — the Adirondack experience may lie. In this conservation-based model, habitat becomes the focus of core areas, circling outward to increasingly human-impacted buffers, until areas of intensive use are reached. Core preserves are then linked via buffered migratory corridors. Space is allocated not to its highest economic use, but rather a scale of substitution is defined from total preservation to compatible economic use to total human development.

The conservation biology model was designed with very large landscapes in mind, potentially linking distant protected areas thereby providing for greater ecological stability. For instance, Noss (1994) considers wilderness recovery networks for multi-state regions in the U.S. In fact,

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the entire Adirondack Park has been considered as a core to a northeastern network of protected areas. This is particularly relevant to the consideration of re-introducing large carnivores to the region. For instance, the corridor concept may be extended westward to provide for wolf migration from the Algonquin Provincial Park of Ontario, Canada (Granskou, 1996).

However, the conservation biology model is applicable at many scales, including within the Park boundary. Table 2 categorizes Park land in ascending order of intensive use and draws a connection to the theoretical conservation biology multiple-use model. Public land is classified into four classes according to compatible recreational uses. Private land is zoned into six classifications, ranging from least intensive use (forestry, low density housing) to most intensive use (mining, high density housing). Many forest preserve areas would satisfy the core classification of the conservation model, where current, direct human impact is

limited or non-existent. Inner to outer buffers might include some State land and large private holdings, where close to 90% of land zoned for resource management and rural use is forested. Furthermore, over 20% of private land is owned by just 6 industrial timberland owners, currently providing for large, unfragmented complements and corridors to State land. To complete the comparison, the two degrees of intensive land use, hamlets, and industrial use areas total under 8% of the Park, providing for concentrated, dispersed, and buffered areas of intensive use.

Under this regime of managing human population and open space, the Adirondack region may approach a criterion for strong sustainability, even if imperfectly, by maintaining overall ecological character, allocating economic use, and defining some limits to substitution. This has necessarily required: (1) an initial condition of open space, and (2) restraints on the Park economy's physical size and space consumption. These two

sets of conditions are explored in turn below.

**Open Space Protection:
by Design or Chance?**

Thorough accounts of Adirondack history are not lacking, including the most recent works of Paul Schneider (1997) and Philip Terrie (1997). However, despite the region's rich written and oral history, at times the discussion of sustainable development ignores the uniqueness of its century-old historical roots. For those who would apply the Adirondack experience elsewhere, an appreciation of these historical conditions is critical.

The acquisition of land by the State was not, for the most part, a result of the social or environmental planning of a far-sighted state guardian. As many unique things are, the Adirondacks were an accident in many respects. Before the turn of the century, the State owned much of what is now the Adirondack Forest Preserve by default. Large tracts of private land were lumbered, abandoned, and

Table 2. State and Private Adirondack Land Classifications, 1992.

Conservation Model Classification	APA Classification		% of Park	Compatible Human Uses:
	State Land (47%)	Private Land (53%)		
CORE ↑ INNER BUFFER	Wilderness		17.14	Camping, hiking, canoeing, fishing, trapping, hunting, snowshoeing, ski touring
	Primitive & Canoe Wild Forest		1.31	Similar to wilderness uses
	Other		20.95	Similar to wilderness uses with the addition of some motorized vehicle access
			7.07	Water (6%), Pending (0.68%), State administration (0.01%), historic (0.01%), and intensive use (0.33%: ski centers, public campgrounds, developed beaches, boat launching)
OUTER BUFFER ↑ INTENSIVE		Resource Management	28.06	Forestry, agriculture, game preserves, recreation, very low density development (42.7 acre average lot size)
		Rural Use	17.76	Similar to resource management, low density development (8.5 acre average lot size)
		Low Intensity	4.78	Low density residential development (3.2 acre average lot size)
		Moderate Intensity	1.78	Concentrated residential development (1.3 acre average lot size)
		Hamlet	0.95	All uses compatible, no APA development intensity limit
		Industrial	0.22	Existing industrial uses (ex/ mining), future industrial development

Note: Based on information from Barge (1996) and Collins (1994). The conservation model classification is for illustrative purposes.

then purchased by New York at the cost of unpaid taxes. Its value as a material resource diminished, the opportunity cost of converting timberland to parkland was very low. By 1885, the year the Forest Preserve was created, McMartin (1994) finds that the State owned over 800,000 Adirondack acres from tax sales alone. Five years later, when New York was first authorized to purchase land to add to the Forest Preserve, the going rate was then \$1.50/acre.

By 1914, the State had added an additional 713,432 acres to the Adirondack Forest Preserve from \$4,075,000 of allocations, matching the acreage of land purchased and continuously held through tax sales (N.Y. Conservation Commission, 1914). Including 55,704 acres purchased in the Catskill Mountains between 1890 and 1914, the cost of land acquisition averaged \$5.30/acre during the most significant period of State land additions. In today's dollars, this averages under \$80/acre. In comparison, Adirondack forest preserve purchases from the 1972 and 1986 Environmental Quality Bond Acts cost New York \$218/acre on average (Dawson, 1990). The panic buying of the late eighties by State and conservation groups in reaction to threats to subdivide huge tracts of lands in the northern forest, led to large-lot land prices approaching \$300/acre (Reidel, 1994). Shorefront property and small parcels can cost many multiples of this per acre. For instance, conservation groups have paid over \$1,000/acre for valuable upland lots, and shorefront property can fetch over \$3,000/linear foot (Carr, 1996).

This "bargain-price" condition for the Park, however, means little out of the context of who was willing to spend (or lobby) for the land's protection. As much as the Park's birth was a function of low opportunity cost, it was also a consequence of the deep pockets and political prowess of an elite late-19th century conservation movement. In many respects, the Adirondacks were bought by wealthy Americans for wealthy Americans. Louise Halper (1992) explains, "The creation of

the Adirondack Park and the constitutional protection of the Forest Preserve enhanced the recreational value of the great Adirondack estates of wealthy downstaters." State land protection meant a tax-free wilderness for the nation's privileged class. In 1893, forty-five private preserves totaled 941,000 acres (McMartin, 1994). By 1897, ownership of the 3 million acre Adirondack Park was in nearly equal thirds between the State, individuals and companies, and private preserves and parks. These private playgrounds were primarily protected for fishing, hunting, summer retreats, and limited lumbering, and provided a significant source of land for continued low-cost State purchases (or gifts) through the 20th century.

Imagine creating a 2.7 million acre forest preserve out of a mixture of large, small, and shorefront lots at today's prices, market conditions, and tight state budgets. The Adirondacks were a bargain (in many respects). This argument is not meant to belittle the broader, farsighted social reasons for protecting the Adirondacks. Concerns for watershed protection and downstate river and canal levels played a large part in gaining the general public's acceptance of the Forest Preserve. Recreational use was also later democratized to a large extent. However, early in Park history, the protection of the private Adirondacks, and its influence on the preservation of the public Adirondacks, was more a product of the Gilded Age and less the utilitarian goal of a socially conscious state. Most significantly, the stewardship of the private preserves led to the State dropping any delusions of eventually buying all land within the Blue Line (Terrie, 1992), producing the uniqueness of the private and public character of the Park we know today.

A final initial condition that helped establish the Adirondacks was the location of the region in relation to population growth and human migration patterns of pre-twentieth century America. In all respects, the Adirondacks were "off the beaten path" for a long time. As Philip Terrie (1994) notes, in 1865 the

region was still largely unexplored. Some softwoods accessible to river transport were cut by the early 19th century, hemlocks were selectively harvested for the tanning industry, and a few regional hardwood stands were clearcut to fuel local iron smelters. However, a combination of poor farming conditions, limited hardwood markets, and difficult access to waterways saved much of the Adirondacks from the fate of its New England neighbors. By the time production in the Adirondack lumber industry reached its peak around the beginning of the 20th century, it was quickly passed by for greater lumber treasures of the West. Consequently, at the Park's birth very large tracts of land were relatively intact.

This initial condition of remote location could also be considered an ongoing condition through the first half of the 1900s. Logging of the private Adirondacks continued to increase, particularly with the development of hardwood markets and railroad penetration into the Park, but large tracts of land were already protected. The land demands of hotels, hunting camps, and resorts began to emerge in the early 1900s (particularly along waterfronts), but it wasn't until the completion of Interstate 87 (the Northway) in 1968 that the area was accessible to a significant number of people and second home demand skyrocketed. Consequently, today's Adirondacks are within a day's drive of 60 million people.

The Adirondack Economy

The initial conditions for state land acquisition were suggested to include low opportunity cost of preservation, financially and politically backed conservation efforts, and fortunate geography. If these conditions describe even part of the Adirondack region's success in preserving the core of the integrated landscape, then they would seem to be unique — particularly so close to the population center of the Northeastern United States. A core of protected private land, however, is only part of the Adirondack experience. Many parks across the world have protected

land by drawing a line on a map and declaring park status either through outright purchase or eminent domain. The uniqueness and challenge of the Adirondacks is to integrate economy with ecosystem, commerce with conservation, and people with place. As discussed in the first section, sustainable development is often a veil hiding the familiar goals of economic growth. In the Adirondacks, however, a version of sustainable development has emerged that constrains quantitative growth, yet seeks economic prosperity. While initial State land preservation could be construed in part as an accident of history, the current process in place for managing private land within the Park is very much an exercise of landscape design and imposition of constraints on the market economy. To better understand, we must explore the dynamic interaction of economy and ecology arising from these constraints.

Consider first a very simplified scale of views on economic development within the Park. At one extreme is the market economist's vision, and at the other is the environmentalist's vision. The economist declares that regulations and State land protection are constraining economic growth and therefore causing high seasonal unemployment, high local tax burdens, high state subsidization, and elitist, unconstitutional burdens on private land development and personal enterprise. The environmentalist responds that the Adirondack economy exists because of these constraints, supporting a tourist industry, creating growth in service and trade sector employment, and shaping the conditions for a higher quality of life.

Perhaps the complex story of the Adirondack economy falls somewhere between these contrasting extremes. Seasonal unemployment in the Park is a real and current burden on local lives; but jobs "in-season" are more plentiful than many rural American communities have been able to muster. The tourist industry has grown; but growth has been mainly in low-wage employment. The State government does heavily subsidize the Park through jobs, seasonal unemployment

benefits, and tax payments on State land; but local tax revenues still fall short of expenses and local economies may be left to bear the burden of non-local tourist demands. Adirondack per capita income ranks as the lowest in the State, the percent of people living below the poverty level is the highest, and the number of active physicians per 1,000 residents is the lowest; but the Park region has the highest public recreation acreage per capita, the lowest number of hazardous waste sites in

strained sectors, through substituting labor for capital, or through a shift of labor and resources to the less constrained sectors.

The first dynamic to explore within this framework is the interrelationships of the sectors themselves. In addition to meeting total consumer and government demand, each individual sector consumes economic output from all other sectors. For instance, outdoor recreation (within the service sector) demands gas and food

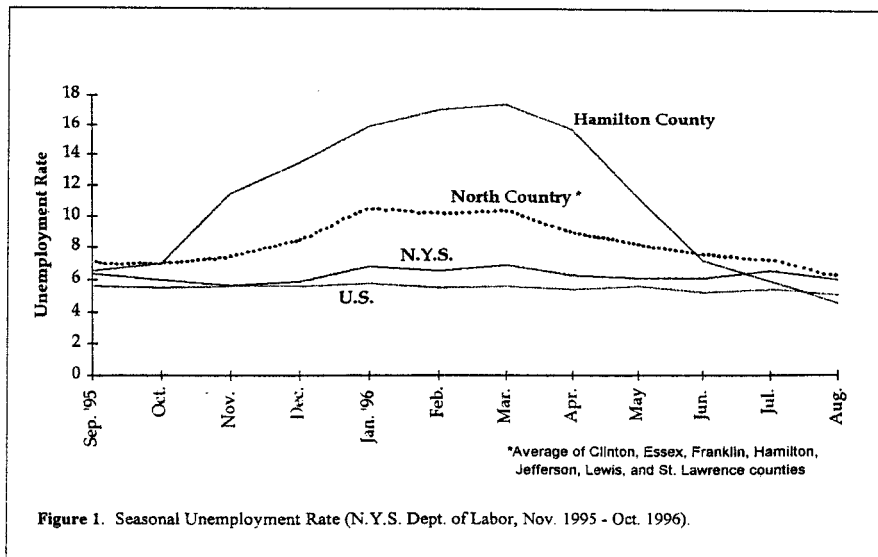


Figure 1. Seasonal Unemployment Rate (N.Y.S. Dept. of Labor, Nov. 1995 - Oct. 1996).

the State, and the lowest number of felony indictments per 10,000 residents (Northrup, 1997). As with defining sustainable development, characterizing the Park economy and standard of living can be a game of extremes.

To explore these economic and social contrasts, suppose the Adirondack economy can be categorized into 8 sectors, 4 of which are constrained by human-made capital and natural resource use. Constrained sectors include agriculture, mining, construction, and manufacturing. Unconstrained sectors include the less capital and land intensive trade, transportation, service, and government sectors. Furthermore, assume the region seeks economic growth through reducing unemployment, expanding the tax base, and promoting tourism. Under this constrained sector hypothesis, economic growth can occur through improvements in efficiency and technology in the con-

from the trade sector, buildings from the construction sector, lodging from the service sector, and roads and general infrastructure from the government sector. If tourism demand is growing, so too are the demands on these interdependent sectors. Therefore, tourism accounts for not only a large percentage of the service sector output, but also a share of other sector outputs. The seasonality of tourism necessarily extends a certain degree of seasonality across all sectors. Dramatic seasonal unemployment, depicted by Figure 1, results. While the North Country counties (and Hamilton County at the most extreme) experience double digit unemployment rates during the winter months, New York's and the national unemployment rates vary within a narrow range.

Given that job growth is limited in the constrained sectors, the unconstrained sectors must also absorb excesses in labor supply to some extent, pushing the price



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of labor down in these growing industries. A study by the Rockefeller Institute of Government (1994) on employment in the Park reported that 90% of the 900 Park jobs cut during New York's recessionary period of 1989-1992 were from high wage construction and manufacturing industries. In contrast, service and trade sector jobs represent 25% of Park jobs, and are the fastest growing areas of employment. Service sector Park industries exceeding the State and national averages include hotels, motels, campgrounds, and other recreational services. Within the trade sector, retail trade through eateries and drinking establishments are the dominant industries. In fact, the top three North Country occupations in growth potential include retail sales, cashiers, waiters and waitresses (N.Y.S. Dept. of Labor, 1993).

The largest Park employer, however, is the government sector. The Rockefeller report found that 1 of 3 jobs in the Park is on the government payroll. This sector, including local, State, and federal jobs, is twice as large as the government sector in both New York and the U.S. as a whole. State jobs, accounting for 12% of all Park employment, are four and three times greater than State job percentages in New York and the U.S., respectively. The largest State employers in the Park in 1992 included the five State correctional facilities, the Sunmount Development Center, the Olympic Regional Development Authority, and the New York State Department of Environmental Conservation. Local government employment accounted for over 20% of Park jobs, compared to 12% representation for the

State and 10% for the nation. Clearly the government sector has played a major role in supporting Park communities. This role is partly due to the public good nature of a park, but has also served to subsidize economic growth.

Since the Park is a public good — individual users do not pay completely for the costs of owning and maintaining it — this introduces another dynamic to sustainable development. Wilderness is critical to growth in the trade and service sectors of the economy through tourism and recreational use. These sectors, however, do not fully pay for visiting and “consuming” wilderness. The maintenance costs of the tourist economy — roads, sewage, water, electricity, law enforcement, etc. — are not entirely borne by the tourists. Economic theory dictates that as the tourism industry grows, both tourists and tourism employees demand more goods and services. Some of the increasing expenses are recouped through “user fees” such as hotel taxes and hunting/fishing permits, but the remaining burden likely falls on Adirondack communities or State transfer payments.

For instance, a study of 68 Adirondack towns found that during the 1980s, the property tax on the median-value home increased by 125%, while median household income grew by only 84% (Brighton, 1996). While Adirondack residents generally have lower tax bills than other New York towns, the fact that median incomes are so much lower in the Park means that residents pay an above average percent of their disposable income on property taxes.

On forested lands, property taxes and

assessed values are growing many times faster than stumpage values. All but the highest quality sites are uneconomical to grow timber on due to the tax burden (Canham, 1994). To stay in forestry, landowners either turn to intensive management with short payback periods, or rely on recreational leasing income and State tax relief programs. Enrollment in tax relief programs, although relatively low, further stresses local government budgets. For instance, in 1987, 304 forest parcels in Adirondack counties were exempt from 80% of assessed value under New York's 480a program. This exemption value totaled \$5.8 million (Dunne, 1990). Currently, over 170,000 acres within Park towns are under 480a exemptions, and over 475,000 acres remain under the old 480 program where assessment values are frozen (Barge, 1996). Further shrinking the local tax base, lands purchased by not-for-profit land trust organizations are totally tax exempt.

Concluding Remarks: Towards Redefining Progress

As a recipe for sustainable development for other ecosystems, the Adirondacks have some unique history that would be difficult to match. The opportunity for sustainable development in the Park arose out of the turn-of-the-century good fortune of inexpensive land, well-funded conservation demand, and off-the-beaten-path geography. In addition, the Adirondack region does not project a vision of sustainability compatible with long-standing goals of the U.S. growth economy. The most often reported socioeconomic conditions of the Park econo-

my are not typically held as attractive regional assets. They include government subsidy dependence, low incomes, high unemployment, low wage jobs, a declining manufacturing base, and inequitable tax burdens. Together with private conservation, these very real limits on economic growth have made wilderness preservation and compatible use in the Park possible.

Limits on economic growth, particularly when imposed from outside forces, do not sit well with many people. McKibben has ceded to these prerequisites for "strong" sustainability, where striking a balance between *realistic* human needs and minimum environmental protections requires a certain degree of sacrifice in materialism. His challenge of sustainability calls for "dramatic shifts in human desire, expectation, and behavior" (McKibben, 1996b). In the Adirondacks, the personal sacrifice is very real, although not entirely self-imposed.

Sustainability, however, must not mean "unchanging" or else the unique character of the Adirondacks will surely wither. The region provides an exquisite story of the co-evolution of culture, economy, and ecosystem. Studies of co-evolving systems are helping to redefine progress, illustrate examples of strong sustainability, and learn valuable lessons from places such as the Adirondacks (see for example, Norgaard, 1994, and Gowdy, 1994). Evolution is about change — not progress through material growth and modernity — just simply change. However, we have become so accustomed to relating growth in consumption with progress that as a society we know no other direction to head. The challenge conveyed by the Adirondack experience questions this faith in unfettered growth in material consumption. Seeking sustainability and economic growth simultaneously, however, has required government subsidization, a transition to the service economy, a disproportionate tax burden, and restrictive regulations on private property rights. Can these current conditions expect to uphold sustainable development?

For instance, the condition of govern-

ment subsidization in and around the Park may be in danger in the coming years. Recent downsizing targets include: the community college system, military bases, and budgets of the Adirondack Park Agency, Department of Environmental Conservation, and Olympic Regional Development Authority. The implementation of welfare-to-work programs over the next few years could particularly hurt Park communities with a limited year-round job base. Furthermore, a low wage seasonal service economy is limited in its potential to support even the most no-frills standard of living. In addition, if local residents are to bear a tax burden of growth through tourism and second-home sales, time will only tell when Park residents demand more compensation for upkeep from non-Park visitors.

The open space character itself — the aspiration for the region's claim to sustainable development — may also be in jeopardy. While the Adirondack region has indeed managed growth, it certainly hasn't done away with it. The natural beauty of the region is the driving force for a subdivision trend and cyclical demand for second-homes since the enactment of the Adirondack Park Agency. At full build out under current zoning laws, there would be over 150,000 houses in resource management and rural use zones, and an additional 250,000 homes along shorefronts and roadsides in and around hamlets (Commission, 1990). This scenario would result in a five-fold increase over the current Park population.

The first one hundred years of the Adirondack experience have been truly unique, shedding some much needed light on the application of sustainable development at a regional level. This paper has evaluated sustainable development and the Adirondack experience to date; however, the next era of sustainable development initiatives would seem to be overdue. Many proposals are on the table, including: coordinating an Adirondack economic development policy (Hohmeyer, 1997), designing more equitable tax options (Brighton, 1996), promoting

value-added production in the declining but important manufacturing sector (Holmes, 1997), providing for incentives for long-term private forest production (Erickson and Zhang, 1997), and strengthening the tourism infrastructure (Martino, 1998). These are the details to be worked out within a constantly evolving economy and ecosystem. However, the foundation has already been laid for the Adirondack region to approach a regional case of sustainable development.

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