

Sustainability in Action

Sectoral and Regional Case Studies

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ADVANCES IN ECOLOGICAL ECONOMICS

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15. In Search of Sustainable Development: Lessons in Application from the Adirondack Park

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INTRODUCTION

At the dawn of the twenty-first century, managers and politicians alike are eager for examples of sustainable development in practice. To this end, the Adirondack Park of New York State is evaluated as a potential example of sustainable development at the regional economy-ecosystem level. First the history and current status of the Adirondack Park are introduced in the context of defining regional sustainable development and its potential economic and ecological requirements. The conservation biologist's multiple use model is incorporated to illustrate some aspects of planning for economies within ecosystems. Next, the unique socioeconomic and ecological conditions from which the Adirondack Park emerged are explored. The implications of sustainable development on the region is then evaluated through reviewing the local impact of economy sector constraints, non-local wilderness protection demand, and local economic growth goals. The paper concludes by evaluating the conditions for and consequences of policies pursuing sustainable development in the Adirondack Park as they relate to efforts to achieve sustainable development in other regions of the world. The experiences of the Adirondack Park are offered as lessons, both positive and negative, towards pursuing sustainable development initiatives world-wide.

THE CASE FOR SUSTAINABLE DEVELOPMENT IN THE ADIRONDACKS

Sustainable development has become an integrated part of social and private planning at many levels of society. In the Northeastern United States, issues of resource sustainability were the focal point of a congressional mandated

study of the Northern Forest (politically defined as 10.5 million hectares of primarily forested land stretching from Lake Ontario to the coastline of Maine). In 1988, the Forest Service of the US Department of Agriculture was directed to identify and assess the region's forest resources, historical and projected land ownership and use, likely impacts of these projections, and alternative strategies available to protect the long-term integrity and traditional uses of land (Harper et al., 1990). The final recommendations sought to promote sustainable resource use by incorporating human economies within their larger ecosystem.

Within this framework, the Adirondack Park provides an encouraging example of mixing public preservation and private development. The one hundred-year-old park at over 2.4 million hectares is the largest park in the lower 48 states – the size of the better-known Yellowstone, Yosemite, Grand Canyon, Glacier, and Great Smoky Mountains National Parks combined (Schneider, 1992). Land protected by the New York State constitution accounts for 47 per cent of the acreage, considered by many as the strongest protection of land in the world. The State Constitution, Article XIV, states: 'The lands of the State ... shall be forever kept as wild forest lands. They shall not be leased, sold, or exchanged, nor shall the timber thereon be sold, removed or destroyed.' The remaining mix of private land is zoned for uses under the authority of the Adirondack Park Agency. While over 1.1 million hectares are preserved as wilderness, the zoned private land is home to 135,000 permanent residents in 105 towns and villages, and hosts over 200,000 seasonal homes. The Park's vast recreational resources (both private and public) are within a day's drive for over 60 million people. 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. The Park's current large, protected, rural and wild character has created the conditions for species preservation and re-establishment, including the moose and raven's natural return, the promise of reintroduction efforts of the bald eagle and peregrine falcon, and serious discussions on wolf reintroduction.

Thus, the sheer size of the region, diversity of natural resources, and inclusiveness of a geologically defined ecosystem create a credible starting-point when discussing the sustainability of an ecosystem. However, it is the inclusion of human communities within a protected ecosystem that most often feeds the discussion of the Adirondacks as a regional model of sustainable development. Wilderness preservation is not sought at the exclusion of human communities and economic activity. Rather, economies and ecosystems are integrated.

To explore this Adirondack case for sustainable development, it is necessary to commit to some definitions. Suppose the goal of regional sustainable development is to preserve ecosystems while allowing for

compatible economic uses. 'Preserve' is used in the sense of maintaining the natural character of a region, and 'compatible' implies activities that do not permanently compromise this overall character. Within the region, a development scale is then implied, ranging from maximum preservation of nature to maximum exploitation of resources. The goal of sustainable development across a region could then theoretically provide for a planned patchwork of areas representative of points on this development scale.

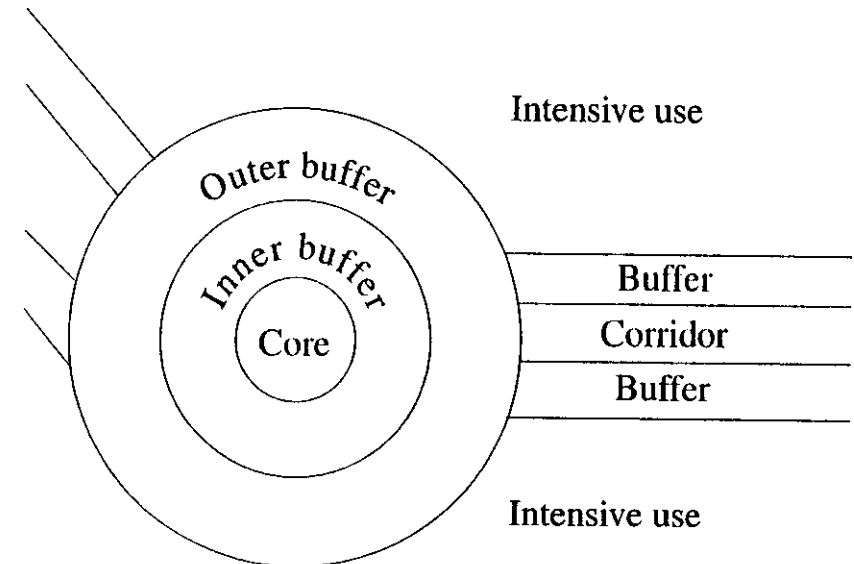
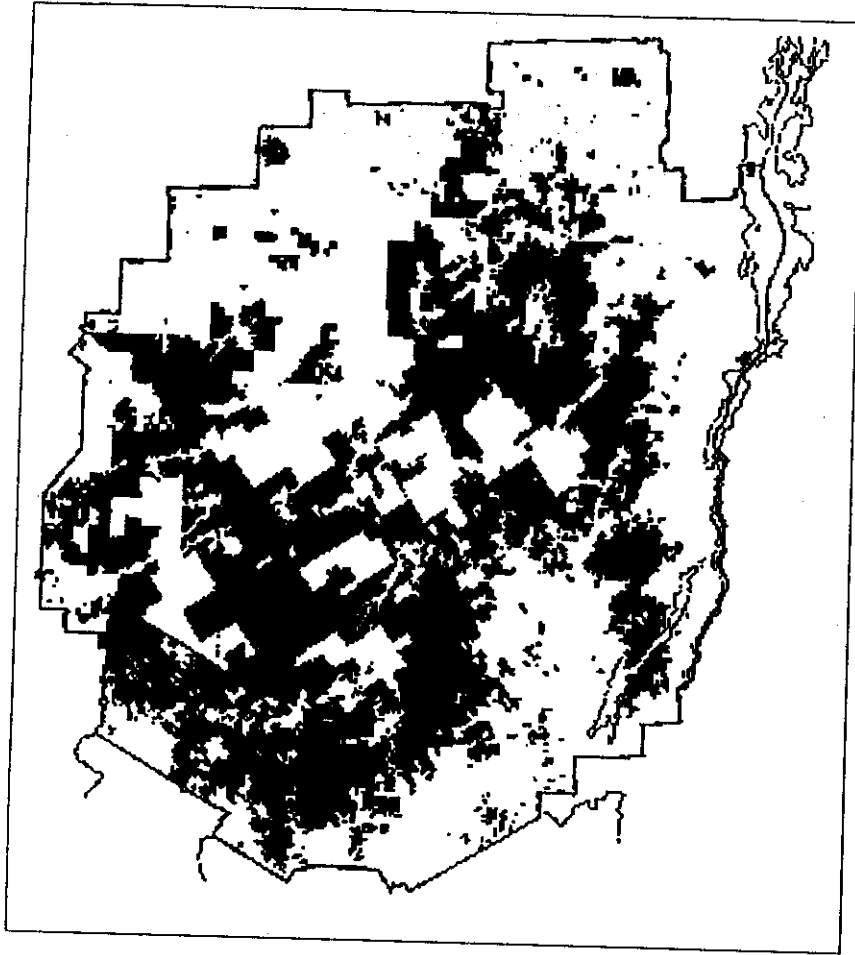


Figure 15.1 Conservation biology, multiple use model

The motivation for preserving the 'natural character' of a landscape ranges from purely egocentric uses (i.e. recreation, scenery, watershed protection) to more biocentric values (i.e. biodiversity, existence). However, regardless of purpose, the common denominator of preservation is open space. To organize space amongst competing uses, the conservation biology literature offers a multiple use model as a useful image of the development-preservation continuum implied by regional sustainable development goals, as well as a possible barometer to evaluate the Adirondack experience (Swallow, 1996; Noss, 1994; Noss and Harris, 1986). Figure 15.1 illustrates its principal components. Fragile habitats are preserved in 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.

This concentric circle image is given maximum flexibility in application to match actual biophysical and socioeconomic dimensions. The distinction between cores, buffers, corridors and intensive use areas is fuzzy in practice.



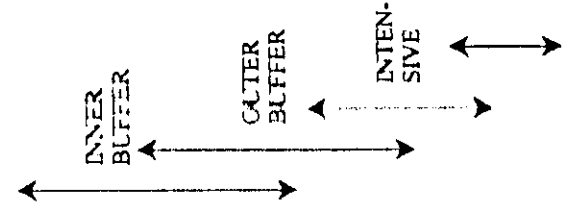
Source: Brown, 1985

Figure 15.2 Adirondack Park with State Forest Preserve highlighted

However, even imperfectly applied, Swallow (1996) notes that the geometry of the multiple use model defines resource trade-offs for managers. Space is allocated not to its highest net present value, but rather a trade-off

Table 15.1 State and private land classification, 1992

Conservation model Classification	APA classification State land (47%)	Private land (53%)	% of Park	Compatible use:
CORE	Wilderness		17.14	Camping, hiking, canoeing, fishing, trapping, hunting, snowshoeing, ski touring
	Primitive & canoe		1.31	Similar to wilderness uses
	Wild forest		20.95	Similar to wilderness uses with the addition of some motorized vehicle access
	Other		7.07	Water (6%), Pending (0.68%), State administration (0.01%), historic (0.01%), and intensive use (0.33%: ski centres, public campgrounds, developed beaches, boat launching)
	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 Collins (1994). The conservation model classification is for illustrative purposes.

between preservation and development priorities dictates economic uses *compatible* with environmental conservation.

To get a sense of how public land is intermingled with private lands in the Park, Figure 15.2 maps the Adirondacks with Forest Preserve land highlighted. Table 15.1 categorizes Park land in ascending order of intensive use according to Adirondack Park Agency (APA) zones. Public land is classified into four classes according to compatible recreational uses. Private land is zoned into six classifications, ranging from least intensive use (e.g. forestry, low-density housing) to most intensive use (e.g. mining, high-density housing). The first column of Table 15.1 draws the connection between the actual land classifications and the theoretical zones of the multiple use model.

In comparing the theory of conservation through zoned multiple use with the reality of the Park, some striking similarities emerge. Most forest preserve areas would satisfy the core classification of the conservation model. Inner to outer buffers might include some State land and large private holdings, where close to 90 per cent of resource management and rural use land is forested. Furthermore, over 20 per cent of private land is owned by just six industrial timberland owners, further providing for large, unfragmented complements and corridors to State land. Completing the comparison, intensive land use, hamlets, and industrial use areas total under 8 per cent of the Park, providing for concentrated, dispersed and buffered areas of intensive use. Beyond the Park boundary, the corridor concept may be extended westward to provide for wolf migration from the Algonquin Provincial Park of Ontario, Canada (Granskou, 1996). On a still larger scale, the Adirondacks as a whole has been described as a potential core to a network of protected areas in the Northeastern United States (Noss, 1994).

INITIAL CONDITIONS FOR SUSTAINABLE DEVELOPMENT IN THE ADIRONDACKS

Thus far, the case has been made that regional sustainable development requires that ecosystems are preserved while allowing for compatible economic uses. Preservation implies protection of open space. When the dual provision for human use is made, space could be arranged in a patchwork of cores, buffers and corridors, providing for a continuum of preservation and economic needs. Under this chain of logic, the Adirondack region has attempted sustainable development by maintaining ecological character and economic use through providing for and allocating space. This necessarily requires:

1. an initial condition of open space, and
2. restraints on the economy's physical size and space consumption.

This section explores the conditions that made this sizeable protected area possible, leaving examination of the second requirement to the next section.

How the Park came into being is of historical importance, and accounts of Park history are numerous. From this interpretation of the literature, the most important conditions that afforded the creation of the Park were:

- low opportunity cost,
- high conservation dollars, and
- remote location.

Low Opportunity Cost

During the initial years of State land acquisition in the nineteenth century, much of the land which became the Forest Preserve had long lost its value as a material resource. As such, the opportunity cost of converting timber land to park land was very low. For instance, by 1885 the State owned over 323,000 Adirondack hectares essentially by accident. Most of these lands were lumbered, abandoned, and then purchased by the State at the cost of unpaid taxes (McMartin, 1994).

It was not until 1890 that the State was authorized to purchase land to add to the Forest Preserve created just five years earlier. The going rate was then \$1.50/acre. By 1914, the State added an additional 288,726 hectares to the Adirondack Forest Preserve from \$4,075,000 of allocations, matching the acreage of land purchased and continuously held through tax sales (New York Conservation Commission, 1914). Including 22,543 hectares purchased in the Catskill Mountains of southern New York 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 New York Environmental Quality Bond Acts cost the State \$218/acre on average (Dawson, 1990). The panic buying of the late 1980s 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.

Conservation Dollars

The second initial condition that afforded the creation of such a large protected area concerns the deep pockets and political prowess of an elite conservation movement. In many respects, wealthy Americans bought the Adirondacks for wealthy Americans. In the late nineteenth century, wealthy aristocrats were reinventing nature by bringing the luxuries of city life to the woods through the Adirondack Great Camp, and other extravagant bondings with nature. In 1893, 45 private preserves totalled 380,823 hectares (McMartin, 1994). By 1897, ownership of the 1.2 million hectare 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 for continued low-cost State land purchases (or gifts) through the twentieth century.

Of course, the broader social concern of watershed protection played a large part in the creation of both the Adirondack and Catskill Forest Preserves. 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 area originally specified for land acquisition by the Forest Commission of 1890 (Terrie, 1992a,b), preceding the uniqueness of the private and public character of the Park we know today. Halper (1992, 197) 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.

Location

The last initial condition that helped establish the Adirondacks of today 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 Terrie (1994) notes, in 1865 the region was still largely unexplored. Softwoods accessible to river transport were cut by the early nineteenth century; however, a combination of poor farming conditions and difficult access to waterways saved much of the Adirondacks from the fate of its New England neighbours. There, the time had passed when one could travel from Boston to New York City without passing through more than 20 miles of forest (McKibben, 1995).

Before the creation of the Park and protection of the Forest Preserve, the Adirondack region had not experienced this complete denudation. The northern woods of New England, when not cleared for farming, were logged for softwoods early on and then clear-cut after railroad transportation developed. By the time production of the Adirondack lumber industry reached its peak in national standing (ranked first in 1850) it was quickly passed by for greater lumber treasures of the west, falling to seventh in national rank by 1890, and further to twenty-second by 1910 (McMartin, 1994, Fig. 41, p. 151). Again, a case of low opportunity cost of nineteenth-century preservation afforded the purchase of some valuable twentieth-century timberlands.

Consequently, near the turn of the century very large tracts of Adirondack land were relatively intact. In 1888, over 780,000 hectares were considered virgin forest, with an additional 545,000 hectares logged only for softwoods (see Table 15.2).

Table 15.2 New York Forest Commission classification of the (pre-Adirondack) Great Northern Forest, 1888

Hectares	Classification
42,139	Improved, cleared for agriculture
346,000	Wild meadow
27,473	Water
12,595	Waste: rocky, barren or sterile, incapable of raising forest
11,038	Burnt since 1886
31,173	Denuded or stripped of timber before 1886, not yet occupied by new trees
545,773	Lumbered, soft timber removed
781,933	Forest, virgin, unharmed and untouched
1,452,470	TOTAL

Source: McMartin (1994) Fig. 24, p. 93.

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 into the early part of the century, particularly with the development of hardwood markets and railroad penetration into the Park, but large tracts of land were already protected. The relatively newer land demands of hotels, hunting camps and resorts began to emerge in the turn-of-the-century Adirondacks, 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 by automobile and second-home

demand skyrocketed. Today's Adirondacks are within a day's drive of 60 million people.

ECONOMIC IMPLICATIONS OF SUSTAINABLE DEVELOPMENT IN THE ADIRONDACKS

The initial conditions of low opportunity cost, substantial conservation dollars and fortunate geography would seem to be unique in this day and age, particularly within the population centre of the NE United States. As human populations and their accompanying resource demands continue to grow, it seems that no place on earth is safe from the wastefulness of material consumption in the developed world and the desperation of subsistence consumption and population explosion in the developing world. In the Adirondacks, however, 'wilderness' is also given a place amongst resource demands through open-space protection and land-use planning. Ninety per cent of 'all wilderness east of the Mississippi and north of the Mason-Dixon line lies in the Adirondack Park' (Schneider, 1992). The previous section suggested some initial conditions that have made this possible. The last section of this chapter will address whether these are necessary conditions for modern-day preservation initiatives.

Yet, this is only half of the story. Sustainable development attempts to address both preservation *and* economic needs. To succeed in the first goal requires protected open space, which implies limiting the physical size of the economy in seeking the second goal. In the tradition of the US growth economy, meeting economic needs has been synonymous with seeking economic growth. Regional economic growth is in turn dependent on relationships with man-made capital (buildings, machinery, etc.), labour, technology, natural resources (land, renewable and non-renewable resources) and trade. Growth can occur through improvements in efficiency of use of man-made capital or natural resources, through increasing the physical size of capital or resources available for use, through trade with other economies, and/or through technological change.

In the Adirondacks, both the expansion of capital and the amount of natural resources available (particularly land) are constrained to some extent. This has not halted economic growth in the Park, but it certainly has contributed to changing its dynamics and sources.

A conceptual input-output analysis is illustrative of these possible dynamics. Imagine the Adirondack economy can be categorized into eight sectors, four of which are constrained in capital and resource use. Constrained sectors include the relatively more capital- and resource-intensive agriculture, mining, construction and manufacturing sectors. Also, suppose that the region

as a whole is committed to economic growth. Growth in the economy can occur through improvements in efficiency and technology in the constrained sectors, through substituting labour for capital or through a shift of labour and resources to the less constrained sectors of trade, transportation, service and government. If these shifts themselves are limited because of lacking consumer demand, then government subsidization might be required to provide for aggregate economic growth.

Furthermore, constraints on the supply of natural resources for production together with increasing demand for their use in recreation would seem to imply resource price inflation. However, since constraints arise from wilderness preservation, there is effectively a zero resource use price for production. Yet 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 the use of wilderness. As a public good, wilderness does not receive full private use compensation. The expense of maintaining the infrastructure for compatible wilderness use therefore implies a local maintenance burden, only part of which might be recouped through growth in tourist-related industries, and, in practice, very little recouped through the limited use of user fee mechanisms (e.g. hotel taxes, fishing permits).

This sample of possible dynamics is supported by the experience of the Adirondack region, where considerable non-local wilderness demand exists, sectors are constrained due to State land preservation and private zoning requirements, and the economies of the 105 towns and villages, seven counties, and the State of New York seek growth. A set of conditions is hypothesized in the following subsections to be related with these dynamics. They include:

- government subsidization,
- low-wage service sector job growth,
- high seasonal unemployment,
- heavy local tax burdens, and
- continued private conservation support.

Government Subsidization

A 1994 study of employment in the Park by the Rockefeller Institute of Government (1994, Fig. 1, p. 2), revealed that one in three 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 US as a whole. State jobs, accounting for 12 per cent of all Park employment, are four and three times greater than State job percentages in New York and the US, respectively. The largest State employers in the Park in 1992 included

five State correctional facilities, the Sunmount Development Center, the Olympic Regional Development Authority, and the NYS Department of Environmental Conservation (DEC). Local government employment accounted for over 20 per cent of park jobs, compared to 12 per cent representation for the State and 10 per cent for the nation (Rockefeller Institute of Government, 1994, pp. 1–5).

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 as a subsidy to economic growth.

Low-wage Employment

The fast-growing service and trade sectors employ the next largest proportions of Park residents (25 per cent), but are composed of predominantly low-wage industries relative to other sector jobs. Service sector Park industries exceeding the State and national averages include hotels, motels, campgrounds, and other recreational services. Within the trade sector (21 per cent of Park employment), retail trade through eateries and drinking establishments are the dominant industries, driven by the area's tourism (Rockefeller Institute of Government, 1994, pp. 1–5). In fact, the top three occupations in growth potential in Adirondack counties include retail sales, cashiers, and waiters and waitresses (NYS Department of Labor, 1993).

Growth in the retail and trade sectors, together with insulated government jobs, small firm sizes, and the dollar-dependent Canadian shopper, all helped the Park weather the recessionary period of 1989–92, on average, better than the State or nation. The Park's job base and inflation-adjusted total payroll rose during these years by 1.6 per cent and 2.2 per cent, while New York's fell by 6.3 per cent and 1.7 per cent. However, the majority of job growth in the Park was in the lower-wage service and trade industries, heavily tied to the US–Canadian dollar exchange rate. In fact, 90 per cent of the 900 jobs cut during this period were from high-wage construction and manufacturing industries (Rockefeller Institute of Government, 1994, p. 9).

These dynamics might be expected under the constrained sector sustainable development hypothesis.

High Seasonal Unemployment

The third condition is also a form of government subsidy and relates to the trend of growth in low-wage jobs identified above. Due to the area's dependence on tourism and outdoor sports, sharp seasonal swings in unemployment rates are commonplace. The northern counties of New York can have seasonal unemployment rates topping 20 per cent during the winter months, while New York's and the national unemployment rates vary within a

narrow range between 5 and 7 per cent. Although statistics for unemployment insurance pays are unavailable, it is expected that these benefits would mirror the employment situation in the northern Adirondack counties, providing for another large Adirondack government subsidy.

Other employment limitations in the Park include the lack of cities and a declining industrial base, forcing many residents to find employment outside the blue line. Earlier studies of Park commutation patterns suggest that over one-quarter of residents travel over 30 minutes to work, a relatively high number for rural counties (Dunne, 1990a). With regard to manufacturing employment, many people's livelihoods are tied to a few large firms. Employment in the handful of paper mills that dot the North Country are particularly vulnerable to erratic industry cycles.

The Tax Burden

While the Adirondack economy grows through the tourist industry and vacation-home sales, the demand for public infrastructure also expands. Visitors are attracted to the wild character of the Park, but do not fully pay for its expense given the nature of a public good. Some tourist-related expenses are recouped through hotel taxes and hunting/fishing permits, but largely the burden falls on Adirondack communities.

The most recent Park-wide study of the tax base was completed in 1990 for a governor-appointed study of the Park called *The Adirondack Park in the Twenty-First Century* (Commission on the Adirondacks in the Twenty-First Century, 1990). In 1987, local government expenditures for current operations per capita for Park towns was \$303.47, compared to a State-wide town average of \$235.48 (excludes New York City) (Dunne, 1990b, Table 11). A separate study of 68 Adirondack towns found that during the 1980s, the property tax on the median-value home increased by 125 per cent, while median household income grew by only 84 per cent (Brighton, 1996). Adirondack residents generally have lower tax bills than other New York towns; however, the fact that median incomes are so much lower in the Park means that residents pay an above average percentage of their disposable income on property taxes.

On Adirondack forest 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 due to the tax burden (Canham, 1994). A trend away from forestry is evident in the forest inventory data. Between 1980 and 1993, average growing-stock volume in the Park grew 2.3 cubic feet for each cubic foot harvested (Widmann and Drake, 1996).

To stay in forestry, landowners either turn to intensive management with short payback periods, or rely on recreational leasing income and State tax relief programmes. Enrolment in tax relief programmes, although relatively

low, has further stressed some local government budgets. For instance, in 1987, 304 forest parcels in Adirondack counties were exempt from 80 per cent of assessed value under New York's 480a programme. This exemption value totalled \$5.8 million (Dunne, 1990c, Table 2, p. 86). Currently, nearly 69,000 hectares within Park towns are under 480a exemptions, and 202,350 hectares remain under the old 480 programme where assessment values are frozen. Further shrinking the local tax base, lands purchased by not-for-profit land trust organizations are totally tax exempt.

Despite the residential property and forest land tax burdens, property taxes still account for a lower than average percentage of local government revenue in the Park versus state-wide units. In 1987, property taxes for Park counties, towns and school districts covered 17.9 per cent, 53.8 per cent and 36.4 per cent, respectively, of total revenues. The State average (excluding New York City) was a higher 27 per cent for counties, about par at 52.8 per cent for towns, and a higher 48.2 per cent for school districts. To help close the gap between expenditures and revenues (particularly for capital and infrastructure improvements), Adirondack counties and school districts have to rely relatively more on State and local aid. In 1987, Park county aid totalled 37.3 per cent of total revenues, compared to 28.7 per cent for all upstate New York. Park school district aid totalled 58.8 per cent of total revenues, compared to 45.1 per cent for State-wide units (Dunne, 1990b, Table 1, p. 58).

Many villages and towns within the Park have to rely heavily on yet another form of government subsidy, namely, State tax payments on Forest Preserve lands. In Hamilton County, for instance, over 50 per cent of total taxable land value is State-owned land. Hamilton County also has the highest seasonal unemployment rate in the Adirondacks. Some towns have taxable value in State land approaching 90 per cent of the tax base, and only four Adirondack towns have no State land on the tax roll (Dunne, 1990b, p. 64). Without the payment of taxes on these properties, Adirondack communities could not provide even the most basic goods and services.

Private Conservation

While economic growth has been kept in check, growth in the twenty-first century is often viewed as the most significant threat to the region's natural character and success as an integrated economy ecosystem. Most significantly, intensive irreversible shorefront development and a massive subdivision trend threaten the Park's water resources and open-space character. Sales of subdivided properties tripled between 1982 and 1985, and then doubled again by 1988. These alarming trends spurred the creation of the Commission on the Adirondacks in the Twenty-First Century. The Commission reported that at full build-out under current APA zoning laws,

there would be 156,598 houses in resource management and rural use zones (see Table 15.1 for definitions), and an additional 250,000 homes along shorefronts and roadsides in and around hamlets (Commission on the Adirondacks in the Twenty-First Century, 1990, p. 49). This scenario would result in a five-fold increase in the current Park population.

To help guard against this outcome, private conservation has again stepped in. The condition of substantial conservation dollars that created a significant initial condition to the Park continues in more recent times to provide support for land conservation efforts. Currently, land dedicated to private forest conservation totals perhaps 25 per cent of the Park, or close to half of all private lands, playing a critical role in complementing State conservation efforts.

Most of these parcels are not the size of wealthy estates, or owned by large conservation organizations such as The Nature Conservancy. They include 410 parcels totalling 38,272 hectares assessed as private hunting and fishing clubs, and approximately 10,000 parcels totalling over 578,000 hectares assessed as private wild forest lands. Tax assessors use a system of current taxable use in classifying parcels, so multiple uses are difficult to distinguish. For instance, over 80 per cent of lands owned by Finch, Pruyn and Co. (a Glens Falls based pulp and paper company and the second largest landowner in the park) are leased for recreational uses on three-year contracts (Behan, 1995). Some acreage may be assessed for recreational use rather than forest products.

Conservation dollars have also played a role through not-for-profit land trust organizations acting as land brokers to State land acquisitions. The State is required to follow a number of procedures and safeguards in purchasing property, which can significantly delay transactions. Conservation groups are able swiftly to buy key tracts of land (often at inflated, off-the-market land prices) with great flexibility and up-front financing, only for the State to repurchase (at cost plus administrative reimbursement). The role of land trust organizations in pre-acquisition to permanent State property accounted for 22 per cent of transactions eventually acquired under 1986 Bond Act funds, amounting to 79 per cent of acreage purchased and 68 per cent of dollars spent (The Land Trust Exchange and Russel, 1990, 172-86). The not-for-profit role further strengthened following the defeat of the Twenty-first Century Environmental Quality Bond Act of 1990 and before the addition of the Environmental Protection Fund to recent State budgets (1993 current).

LESSONS FROM THE ADIRONDACK EXPERIENCE

This chapter has been somewhat schizophrenic in its message about sustainable development. An encouraging personality argued that the Adirondack Park is a hopeful example of applying principles of sustainable development within a large-scale economy-ecosystem. The modern-day Adirondacks of New York State have evolved into a system of land preservation and conservation that attempts to define the limits to substitution between human-made and natural capital. Nearly half of the Park is protected as 'forever wild' in a public forest preserve, while the remaining private acreage is zoned in a system of compatible use and actively managed for growth.

However, a discouraging personality of this chapter has

1. described a set of very fortuitous conditions that allowed for the creation of the Adirondacks that would be difficult to replicate, and
2. painted a picture of socioeconomic conditions that have both emerged from and supported sustainable development in the Adirondacks that are not typically held as attractive regional assets.

The opportunity for sustainable development in the Adirondacks arose out of turn-of-the-century good fortune, i.e. inexpensive land, well-funded conservation demand, and off-the-beaten-path geography. Despite success in the preservation arena arising from this opportunity, the description of today's Adirondacks includes government subsidy dependence, low incomes, high unemployment, low-wage jobs, a declining manufacturing base and inequitable tax burdens. Together with well-funded private conservation efforts, these very real limits on economic growth have helped make wilderness preservation and multiple use in the Adirondacks possible.

Both personalities have many lessons to offer in defining and applying large-scale sustainable development initiatives into the twenty-first century. To preserve large areas with existing human settlement patterns requires large-scale, integrated planning. The Adirondacks were fortunate in that competing resource demands of late nineteenth-century preservation were somewhat diminished. Thus, a core of land was afforded protection before twentieth-century land demands emerged. In addition, the Adirondacks have always been a harsh environment. This placed a natural limit on farmland demand early in Park history and acted to limit housing demand until interstate highway access was completed in 1968. Preservation across the world has often been easier to achieve in harsh environments not conducive to high-density human habitation. However, as technology continues to push back natural limits, more of the world's ecosystems become vulnerable to development in the absence of foresight.

Preservation today, quite simply, has a higher opportunity cost in pure economic terms. Thus, similar to the Adirondack experience, preservation to a large extent requires organized, politically connected, well-funded groups. Increasingly, the organization must be accountable to local interests and the preservation message must be one designed in the interest of local economies (Erickson and O'Hara, 1999). On this point, the discouraging voice of the Adirondack story has many lessons to offer, including the importance of

1. attention to economic structural change due to changing land use, rights, and ownership patterns (Erickson et al., 1998),
2. design of tax systems that benefit preservation and conservation of resources (Erickson and Zhang, 1998), and
3. finance of public goods more closely tied to economic use.

Continued preservation of State land and conservation of private land in the Adirondacks will also require properly valuing the economic, environmental and social benefits of open-space protection. Both the tangible and intangible benefits of open-space protection are at the heart of why people choose to stay and live in places like the Adirondacks (not just visit or vacation) despite limited income potential. The quality of life, not necessarily the quantity of life, can be very high in the Adirondacks. A recent study entitled *The Adirondack Condition* made a first attempt to measure Adirondack welfare through a diverse set of economic, social and environmental variables (Northrup, 1997). The study compared the Adirondack region with other regions in the State. Not surprisingly, the Adirondack region had the lowest per capita income, highest percentage of people living below the poverty level, and lowest number of active physicians per 1,000 residents in the State. However, the Adirondack region had the highest public recreation acreage per capita, the lowest number of hazardous waste sites, and the lowest number of felony indictments per 10,000 residents in the State. The study found that despite low economic opportunity, the Adirondack region had one of the highest quality-of-life indices.

Reconciling the pursuit of economic growth with quality of life may be the most powerful lesson from the Adirondack story. The stark realities of implementing sustainable development initiatives, as seen through the Adirondack prism, require a shift away from the destructive myths of growth and material well-being. In the interim, seeking sustainability and economic growth simultaneously has required government subsidization, a transition to a service economy, heavy tax burdens, and zoning regulations on private lands. Can these current conditions expect to uphold sustainability in the long term?

The first one hundred years of the Adirondack experience have been truly unique, and may shed some much-needed light on the mechanics of applying

sustainable development initiatives. As the twenty-first century proceeds, however, the next era of sustainable development initiatives in the Park would seem to be overdue. The Adirondack region has the opportunity to lead by example. A protected natural resource base is in place. The general foundation for managing economic growth has been established. The challenge now is to link regional economic success with continued environmental management through a stronger local voice.

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