

RESEARCH REPORT



Michigan Agricultural
Experiment Station
Michigan State University

Land Use Planning and Growth Management: Comparative Policy Perspectives on Urban Sprawl and Future Open Space Preservation



Foreword

Future community well-being is significantly affected by current land use policies and planning decisions. Many socioeconomic and biophysical aspects of quality of life are similarly influenced by viable economic development strategies and sustainable land use practices that seek to maintain or enhance the long-term productive capacity of our natural resource base. This includes the complex interactions between people and our land and water resources that sustain biological productivity and amenity values, so critical in our agriculture, forestry, tourism and recreation sectors.

A key challenge in land use policy is to recognize both the environmental capacities and limitations of our resource base and seek land uses that enhance the long-term benefits of goods and services derived from these resources. Therefore, long-term, comprehensive land use planning, including economic strategies that reinvest in central cities, is central to a balanced growth strategy that seeks to reduce the conversion rate of prime farmlands and unique open space into urbanized uses. Principally, this includes land use guidelines that explicitly recognize land carrying capacity, productivity and suitability considerations in planning future land use.

This challenge can be met most effectively by collaborative planning that explicitly converts statewide planning goals, objectives and priorities into regional growth strategies and local comprehensive plans that are mutually reinforcing. Such interjurisdictional cooperation provides the basis for economic development scenarios that recognize the comparative advantage of locations and promote associated land uses that will optimally enhance long-term public benefits.

This publication addresses various perspectives and approaches to land use and growth management. The authors hope to inspire land use planning initiatives and collaboration among state, regional and local authorities that will help to improve land use policy and decision-making results and promote comprehensive, long-term planning that is both economically viable and environmentally sustainable.

Ger Schultink
Department of Community, Agriculture, Recreation
and Resource Studies
Michigan State University

Land Use Planning and Growth Management: Comparative Policy Perspectives on Urban Sprawl and Future Open Space Preservation

Ger Schultink, Ali Memon and Michael Thomas

2005

**Department of Community, Agriculture, Recreation and Resource Studies
Michigan State University**

**Michigan State University Agricultural Experiment Station
Research Report 587**

Acknowledgements

The authors wish to thank Leslie Johnson for assistance in the final preparation of this manuscript. In addition, suggestions from Kenneth Verburg, Eckhart Dersch, Eric Strauss, JoAnn Beckwith and Pat Norris are gratefully acknowledged.

This research and publication of this research report were made possible through assistance from the Michigan State University Agricultural Experiment Station and the Victor Institute, Michigan State University and Lincoln University, New Zealand.

Table of Contents

Foreword	inside front cover
1. Introduction — Living Sustainably	6
1.1 The Sustainable Development Challenge	6
1.2 Land Resource Utilization	7
1.3 Agricultural Land Use	9
1.4 Urban Sprawl	9
1.5 Is the Pattern of Current and Future Urban Growth in Michigan Sustainable?	11
2. Urban Decentralization in the United States: An Overview	11
2.1 Introduction	11
2.2 Extensive Urban Development Natural Resources	12
2.3 Impacts of Urban Sprawl on Natural Resources	13
2.4 Environmental Impacts of Sprawl	14
2.4.1 Wetland Impacts and Losses	16
2.4.2 Construction of Impervious Surfaces	17
2.4.3 Impacts of Wastewater and Stormwater Drainage	18
2.4.4 Construction of Roads and Bridges	18
2.4.5 Forest Resources	18
2.4.6 Impacts on Natural Resource-based Tourism and Recreation	19
2.4.7 Impacts on Extractive Industries	19
3. Population, Land Use Trends and Policy Issues in The Great Lakes Region and Michigan	19
3.1 The Great Lakes Region	20
3.1.1 Agricultural Land Use	20
3.1.2 Regional Land Use Trends	20
3.1.3 Land Use Concerns	21
3.1.3.1 Coastal Zone Development	21
3.1.3.2 Urban Sprawl	21
3.1.3.3 Farmland Conversion	22
3.1.3.4 Brownfields	22
3.1.3.5 Agricultural Management Practices	22
3.1.3.6 General Landscape Impacts of Urbanization and Agricultural Development	23
3.2 Michigan Population and Land Use Trends	24
3.3 Public Perception of Land Use Issues	26
3.4 Growth Management Initiatives	28
3.5 Constraints on Planning in Michigan	29
3.5.1 Outdated Institutional Structure	30
3.5.2 Effectiveness of Local Government in Guiding Urban Development	30
3.5.3 Lack of Proactive State Government Leadership	32
3.5.4 Lack of County or Regional Initiatives	33
4. Balancing Land Supply and Demand	35
4.1 Introduction	35
4.2 Need for Strategic Planning and Governance	38
5. Regulatory Approaches to Land Use Planning	43
5.1 Constraints on Regulation	43
5.2 State Legislation within the National Context	45

5.3	Zoning as a Regulatory Tool	46
5.4	Other Regulatory Approaches	46
6.	Non-Regulatory Approaches to Land Use Planning	47
6.1	Introduction	47
6.2	Public Service Boundaries	47
6.3	Purchase or Transfer of Development Rights	47
6.4	Easements	47
6.5	Voluntary Preservation and Public Education	49
6.6	Fee Acquisition	49
6.7	Tax or Economic Incentives	50
6.8	Current Status of Programs to Preserve Open Space Values	50
7.	The Role of Federal, State and Local Governments in Urban Growth Management	51
7.1	Introduction	51
7.2	The Role of the Federal Government	52
7.3	The Role of State Governments	53
7.4	The Role of Local Governments	54
7.5	The Role of Stakeholder Groups in Growth Management	55
7.6	Where to From Here?	57
8.	Planning and Growth Management in The Netherlands and New Zealand: A Comparative Perspective with Michigan	58
8.1	Planning in the Netherlands	58
8.1.1	National Land Use Planning	58
8.1.2	Provincial Planning	61
8.1.3	Local Planning	61
8.1.3.1	The Structure (Structuur) Plan	62
8.1.3.2	The Allocation (Bestemmings) Plan	63
8.1.3.3	The Urban Renewal Plan	63
8.1.3.4	Living Conditions Ordinance	63
8.1.4	Growth Management and Open Space Preservation	63
8.2	Planning in New Zealand	63
8.2.1	The Institutional Framework	64
8.2.2	The Auckland Experience	65
8.2.3	Conclusions	71
9.	Toward a Strategy for Urban Growth Management in Michigan	72
9.1	Introduction	72
9.2	Smart Growth Initiatives and Actions	72
9.3	Scope of a Growth Management Strategy for Michigan	73
9.4	Developing a Political Constituency for Growth Management in Michigan	74
9.5	Legislative and Institutional Reforms	76
9.6	The Development of a Strategic State Planning Framework	79
	References	81

Key words: land use policy, planning, growth management, sprawl, population growth, growth balance, economic development, regional planning, sustainable development.

1. Introduction — Living Sustainably

1.1. The Sustainable Development Challenge

“Two things are unlimited: the number of generations we should feel responsible for and our inventiveness. The first provides us with a challenge: to feed and provide for not only the present but all future generations from the earth's finite flow of natural resources. The second, our inventiveness, may create ideas and policies that will contribute to meeting that challenge.”

– Jan Tinbergen, Nobel laureate in economics.

Since the U.S. development boom of the 1950s, fundamental concerns have surfaced about population growth, its management, and its socioeconomic and environmental effects. In the early 1960s, some of these concerns involved the characterization of economic growth — its goals and public needs, foreign trade and balance of payments, the role of labor, inequality and poverty, and, specifically, the distributional effects of income and employment (Phelps et al., 1962). Economic growth was viewed as the driver of social well-being, fundamental in preserving western economic dominance over the planned economies of the communist bloc. Public policy — including taxation, investment strategies, human capital development, university education and research — was primarily examined in its crucial role of stimulating economic growth.

During the 1960s and early 1970s, the fundamental notion of a limited carrying capacity of the world's natural resources was increasingly discussed. This discussion included questions on sustaining existing growth rates, population pressures on scarce and finite natural resources, the effects of resource degradation on long-term production capacity and concerns about potential irreversible trends. *The No-Growth Society* (Olson and Landsberg, 1973) introduced the fundamental issues of risks of growth, zero population growth, urban population growth and growth effects.

Forrester (1971) published three major works, *Industrial Dynamics*, *Urban Dynamics* and *World Dynamics*. Each used simulation modeling to explore the interaction of system components and derive an

understanding about managing complex systems. In *World Dynamics*, he joined the ranks of concerned environmentalists warning about potential food shortages, resource depletion and environmental pollution. He illustrated the dangers of existing policies and made recommendations about birth rates, industrialization rates and the use of natural resources to achieve world equilibrium. He suggested not intuitively pursuing “obvious solutions” to social problems because system complexity and its misunderstanding might result in bad policy choices. Critics argued that an aggregated model, in which the major variables describe mean global conditions at various levels and no distinction is made between the development stages among nations, should be considered highly rudimentary and preliminary. For instance, the model was viewed as unduly pessimistic because it did not reflect the 30 percent decline in the U.S. birthrate in the 1960s.

Similarly, in *The Limits to Growth* (Meadows et al., 1972), the results of global computer analysis compared rates of population and industrial growth to declining natural resources. It concluded that modern industrial society might not survive this disparity during the next century. Critics argued that this scenario was unduly pessimistic because the study failed to take into account the ingenuity of evolving science and technology. Others argued that it provided an early warning — a wake-up call indicating that if present trends of world population growth, industrialization, pollution, food production and resource depletion were to continue unchanged, a potentially dramatic, possibly uncontrollable decline in both population and production capacity would result.

Beyond the Limits (Meadows et al., 1992) expanded these concerns and concluded on the basis of new trends and model simulation results:

- The use of many essential resources and the generation of many pollutants had surpassed use rates that were physically sustainable and might eventually result in an uncontrollable decline in food output per capita, overall energy use and industrial output.¹
- The decline was not inevitable if public policies were pursued to reverse population growth rates and growth in per capita material consumption, and were combined with a dramatic increase in the efficiency of energy and material use.

- A sustainable society was still technically and economically possible if public policies were pursued that did not focus on continued economic expansion as a problem-solving strategy but rather on a transition to a sustainable society that carefully balanced short- and long-term goals with emphasis on sufficiency, social equity and *quality of life* rather than *quantity of outputs*.

On the *supply side*, the principle of limited food production capacity is exemplified by the fact that the principal grains exporters — the United States, Canada, Australia, Argentina and the European Union — seem to have reached a plateau. Together, they produce about 85 percent of the world's grain exports, an increase from less than 60 million tons in 1960 to 200 million tons in 1980 (Brown and Halweil, 1998). However, since 1980, no further growth in world grain exports is evident even though the United States has returned to production virtually all cropland idled under its farm commodity reserve programs (Fig. 1).

Global total output has fluctuated around 200 million tons per year for nearly two decades, initially because demand was not growing, but more recently because of an inability to meet additional export demand. Some argue that output would even be lower if significant commodity price supports were not provided by the United States and the European Union to shore up production levels.

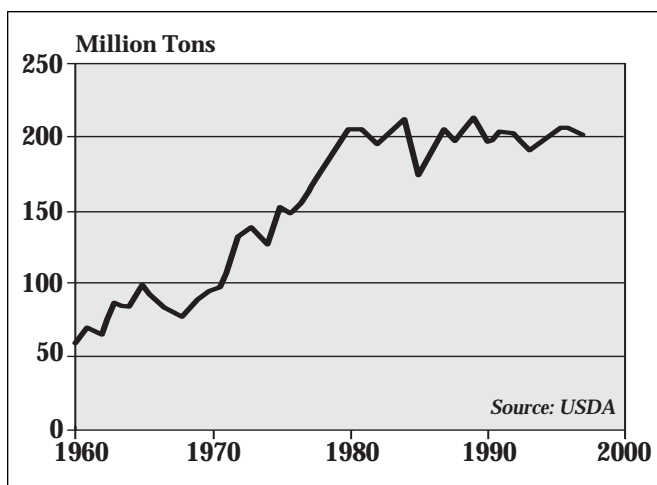


Fig. 1. Combined annual grain exports — Argentina, Australia, Canada, the European Union and the United States, 1960-97.

1.2 Land Resource Utilization

In the United States, where cropland has been declining at an increasing rate since World War II, growth in grain harvest is limited by the increase in land productivity offset by loss of farmland. With increases in productivity now barely keeping up with U.S. population growth, no significant growth in exportable supplies is anticipated. Similarly, the European Union returned most of its agricultural land to agricultural use by 1997, while in some countries, such as the Netherlands, highly productive lowlands are now being converted to nature preserves. Australia and Canada are constrained in their capacity to increase outputs under rain-fed conditions. Argentina can possibly double its production but currently contributes less than 20 million tons per year.

The notion of developing comprehensive policies that promote sustainable use of natural resources, maintain resource production capacity and prevent resource degradation was subsequently adopted by various U.N. conferences and supported by many international development agencies. This is critically important to underdeveloped nations with the least discretionary income to purchase essential food commodities. Promotion of sustainable use policies is also essential to prevent declining production capacity or reverse trends in environmental degradation, thereby likely inducing spiraling effects of economic decline, as depicted below (Fig. 2, Schultink, 2001).

Excess national demand for natural resource-derived goods and services — as compared with the population carrying capacities of available land — and the population growth rates of land in the developing world point to regions with structural deficits, such as Southeast Asia and East Africa. The African food deficit has been expanding and includes an ever increasing portion of sub-Saharan Africa. These concerns about population growth and its impacts are expressed not only at the national level but also in terms of population distribution and dispersion. High population growth, mostly concentrated in metropolitan areas, has caused crises of food security and deteriorating conditions in urban agglomerations where rapid population increases and service demands have outpaced even the most basic infrastructural needs, such as safe drinking water, sewage disposal and treatment, and general education and health care facilities.

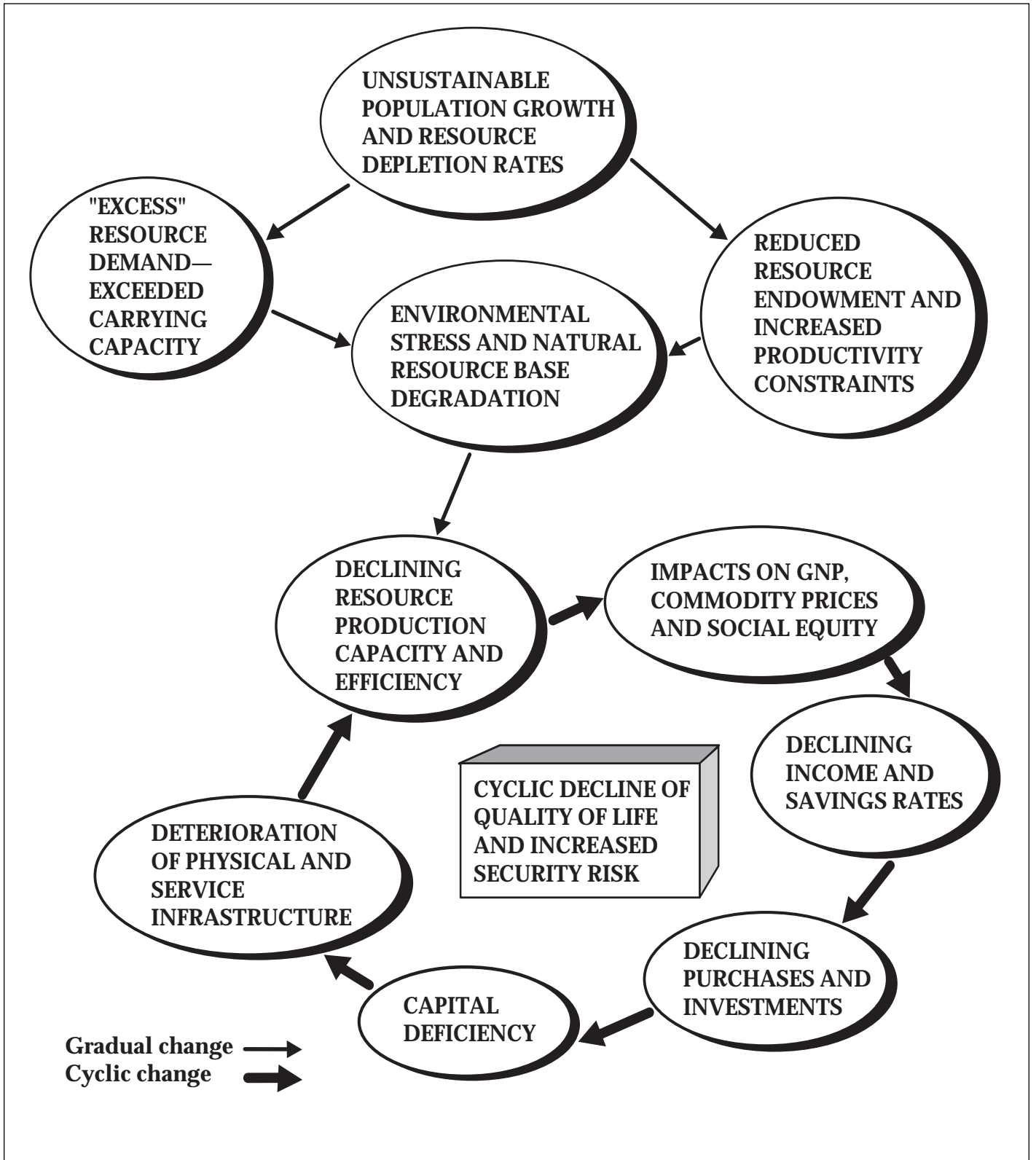


Fig. 2. Impacts of population pressures and demand that exceeds land carrying capacity, causing environmental stress and degradation of natural resource production capacity, social inequity and security.

1.3 Agricultural Land Use

On the North American continent, population growth typically is not characterized by an increase in local population densities but more by a dispersion of low-density residential areas in the urban periphery and nearby rural areas. This dispersed growth pattern, or urban sprawl, has become the focus of concern in many areas. Although space limitations are frequently not of immediate concern in the United States, an increasing awareness exists about the long-term effects of land conversion on the productive capacity and economic viability of the agricultural sector or on other economic and leisure activities associated with open space use. This concern is exacerbated by the fact that the current U.S. standard of living requires a food/energy consumption that is significantly higher than in other parts of the world. For instance, the United States requires *food/feed energy requirements* that are about 41 percent higher than those of China (an emerging industrial power) and an average *land resource utilization rate* per capita of 6.4 times higher (Tables 1 and 2). In comparisons of resource-specific utilization rates, these differences are even more dramatic. They include a per capita rate of about 5.4 times greater for water resources, 19.4 times greater for fossil fuels and 467 times greater for forest products.

It is evident that the long-term economic well-being of U.S. citizens (via direct consumption or exports earnings) is significantly natural resource-dependent. The future standard of living can be affected significantly by reduced agricultural acreage and total output and the overall degradation of land and water resources. This effect will be exacerbated by an increase in U.S. population (currently resulting primarily from immigration) and an expected increase in the standard of living that consumes even more raw materials and energy per capita. In combination, these conditions will challenge domestic natural resource production potential per capita, further increase trade deficits and reduce the balance of payments available to meet national demand for goods and services.

1.4 Urban Sprawl

Urban sprawl has become a controversial policy issue in today's land use and economic development debate. Sprawl and some effects include the following characteristics: low-density new construction on increasingly larger homesites on the urban edge and

Table 1. Foods and feed grains consumed per capita (kilogram) per year in the United States and China (Pimentel, 1991).

Food/feed	USA	China
Food grain	69	269
Vegetables	112	204
Fruit	63	11
Meat and fish	103	25
Dairy products	265	3
Eggs	15	6
Fats and oils	28	6
Sugar	66	6
TOTAL	721	530
Feed grains	801	64
GRAND TOTAL	1,522	594
Kilocalorie/person/day	3,500	2,484

Table 2. Resources utilized per capita per year in the United States and China to supply basic needs (Pimentel, 1991).

Land Resources	USA	China
Cropland (ha)	0.6	0.1
Pasture (ha)	1.3	0.3
Forests (ha)	1.3	0.1
TOTAL	3.2	0.5
Water (liters x 106/yr)	2.5	0.46
Fossil fuel oil equivalents (liters)	8000	413
Forest products (tons)	14	0.03

beyond; widespread strip commercial development along major arterial roads; physically and economically segregated subdivisions; newer, wider roads (financed by all taxpayers, not the primary beneficiaries); utility network expansion/extension (financed by all taxpayers, not the primary beneficiaries); dependence on private modes of transportation; increasing commuting distance, travel time and road congestion; and segregated rather than integrated land uses by zones.

The term “urban sprawl” has no accepted uniform definition. It refers to low-density, often residential development on the urban fringe or beyond the border of suburban development. In other studies, it is defined as standard single-family detached dwelling units at a gross residential density of two dwelling units per acre. The Environmental Protection Agency defines sprawl as residential development at a density of three or fewer dwelling units per acre (EPA, 1993). Thus, sprawl can occur within the boundaries of municipal development, though it is more likely to develop on urban fringes where vacant land exists or beyond the fringes in the form of ribbon or leapfrog development.

Moreover, sprawl encompasses commercial and light industrial uses and the relationship between different types of land use. For this reason, Ewing (1994) prefers to define sprawl in terms of accessibility between related uses. He notes that poor accessibility, and thus sprawl, “may result from a failure to concentrate development and/or mix land uses.” Some also define sprawl as investments at the urban fringe in relationship to disinvestments in the urban core. The Southeast Michigan Council of Governments (SEMCOG) notes that urban sprawl is ultimately a two-part process with “sprawling low-density growth at the suburban fringe and the concurrent disinvestment and abandonment of older/urbanized communities” (SEMCOG, 1991).

One measure of sprawl in the United States is a comparison of relative city population densities with cities in the advanced industrial nations of Europe and Asia. With the exception of New York City, residential densities in the United States are below 20 persons per hectare, compared with 50 persons per hectare for major European cities and 150 persons per hectare for Asian cities (Newman and Kenworthy, 1989). Consequently, land is “consumed” in great quantities, and increasingly so. For instance, in the Chesapeake Bay watershed between 1950 and 1980, the population grew by 50 percent, but the amount of land used for commercial and residential purposes grew by 180 percent (EPA, 1993). In Philadelphia, where the population of the metropolitan area increased by 2.8 percent between 1970 and 1990, the developed land area increased by 32 percent (Greenspace Alliance, undated).

Sprawl clearly reflects the housing preferences of a majority of new homeowners in search of smaller, safer communities with quality schools and amenities typically lacking in the inner city or older suburbs. It also reflects a lack of coordinated planning, which fails to remedy these concerns and promotes new developments rather than revitalization of established settlements.

Sprawl is a process that began largely after World War II — a demand for improved housing conditions resulting from the years of the Great Depression, low family formation and low home construction rates. It was facilitated by technological advances and business and marketing strategies that caused demographic shifts and altered consumption preferences in favor of personal choices, privacy, local control and flexible personal transportation (primarily the use of the private automobile and the development of the interstate freeway system).

Federal, state and local policies equally encouraged low-density development in the suburbs by promoting job creation and housing opportunities in the suburbs. This process began to fuel itself — attracting more residents who migrated out of urban centers, attracting more business investments, expanding local tax revenue and public services, creating more jobs, attracting more residents, and so on. In addition, the removal of sustained investments in the central city eroded its tax base, reduced the quality of schools and public services, increased crime rates, accelerated demand to explore housing options, and so on.

The shift to significantly lower population densities, population distribution and associated land development densities is at the core of sprawl. As we enter the 21st century, new development is dominated by low-density residential and commercial construction on formerly unoccupied lands, with relatively little in-fill development or redevelopment occurring in already built areas. By and large, new development is occurring in what was once open space and rural lands that once provided valuable biodiversity services and land to grow food for nearby cities.

1.5 Is the Pattern of Current and Future Urban Growth in Michigan Sustainable?

Michigan faces profound questions about its growth patterns that will determine the state's economic vitality and quality of life for the next generation and beyond. One of the most fundamental questions is whether Michigan can sustain the pattern of urban and suburban development, often referred to as "sprawl," that has characterized its growth since World War II. Unchecked sprawl now threatens to inhibit sustainable growth (efficient physical and service infrastructure) and degrade the quality of life.

There is no question that this pattern of urban growth has enabled millions of Michigan citizens to realize the enduring dream of home ownership. But it is also clear that sprawl has created enormous environmental and economic costs that may not be sustainable. The key question is: should Michigan move beyond the current pattern of sprawl and rethink future growth policies? This is not a new concern, but it is one that has never been more critical or urgent.

Many planning professionals and community leaders believe that Michigan's traditional development patterns are unsustainable. Urban employment opportunities have decentralized to the suburbs. New housing tracts have moved into prime agricultural lands and environmentally sensitive areas. Reliance on private modes of transportation and expanded infrastructure continues to increase. The acceleration of sprawl has introduced social, environmental and economic costs that until now have been hidden, ignored or quietly absorbed by society. The burden of these costs is increasingly becoming clear and is also reflected in the higher costs of goods and services.

As a result, Michigan's business climate has become less attractive than that of some surrounding states. Some argue that this factor plays a role in the out-of-state migration of many metropolitan area residents. Another consequence is that suburban residents pay a heavy price in taxation and automobile expenses, while residents of older cities and suburbs lose access to jobs, social stability and political power, and the future viability of the agricultural production base and vital ecosystems are threatened.

2. Urban Decentralization in the United States: An Overview

2.1 Introduction

In the United States, people are increasingly leaving cities and even suburbs for nearby small rural towns and townships that offer quality schools, open space and a perceived overall good quality of life. The typical pattern of American urban growth is one of an expansive, low-density, fragmented urban region with sprawling suburbs surrounding an aging, sometimes decaying central city.

One example is the Chicago metropolitan area of 8 million people. It covers more than 3,800 square miles, encompassing 265 municipalities, 1,200 tax districts and parts of six counties and three states — each with its own jurisdictional taxation responsibilities, land use planning and growth management. Though the metropolitan population grew only marginally between 1990 and 2000 — by 4 percent — land devoted to housing increased by 46 percent, and land used for commercial purposes increased by 74 percent. Between 1970 and 1990, the city of Chicago lost 17 percent of its population while the suburbs gained 24 percent, although the inner older suburbs also lost population. At the same time, the city of Chicago had more than 2,000 vacant manufacturing sites (U.S. Office of Technology Assessment, 1995).

According to Rusk (1996), during 1960-90, Michigan's *urbanized growth areas* (with local population increases ranging from 40 to 90 percent) expanded at a rate 1.9 to 2.6 times faster than population growth, signifying a decreasing density of settlement patterns. The rate is even higher for the relatively stagnant urban growth areas (with 2 to 17 percent population increases for the same 30-year period), where the decline of socio-economic conditions is marked by a "suburban flight" with rapid land conversion and population growth ratios of 6.9 to 27. This is caused in part by an urban planning policy that lacks incentives or regulatory controls to revitalize residential, commercial and industrial land uses in established urban areas. This has resulted in a decline of the physical and service infrastructure of urban areas, including a loss of quality in educational, cultural and retailing functions, and frequently, an increase in crime rates.

Most notably, the population of older central cities has declined. Detroit, for instance, lost 821,000 persons between 1950 and 1990. Though much of this loss may be attributed to out-of-state migration in the '80s, this population movement illustrates the statewide process of urban to suburban migration, with land development ratios of *up to 27 acres* of rural land replacing *1 acre* of urban land use. For Michigan's rural areas, the USDA estimated in 1994 that the total land area in farms declined from 17,562,000 acres in 1900 to 10,700,000 acres in 1994, a loss of almost 40 percent. This trend is associated with an increase in land prices from \$33 per acre to \$1,212, a decline in the number of farms from 203,261 to 52,000, and an increase in average farm size from 86 to 206 acres.

The relationship between urban form and quality of life in American cities has been debated for many years. Since at least the 1960s, concerns about urbanization and its influence on local taxation, social costs and environmental impacts have raised it to one of the most significant policy concerns. As a result, many initiatives have been adopted to manage or guide such growth, sometimes with little or no effect. More recently, renewed questions about the effect of sprawling urban development on the economy and the problems of the central city have entered the debate. This debate seriously questions the long-term health and sustainability of metropolitan America in general, and the fate of central cities and inner suburbs, specifically.

2.2 Extensive Urban Development

Extensive urban development is the result of many socioeconomic and technological factors: the push and pull factors that influence people to leave the city and move to more rural areas. Many of these factors are influenced by public policies at many levels, including federal housing policy, state and local taxes and level and quality of service provision, state and local tax rebates, and infrastructural investments. One major concern is that public policy does not require that the full costs of new development be paid by the prime beneficiaries, in effect subsidizing sprawl. In addition, the indirect costs (externalities, including environmental impacts) associated with sprawl are not borne by the residents or businesses that generate them but by the public at large. Indirect costs include various forms of environmental degradation, reduced service provision and increased crime rates in inner cities,

traffic congestion and loss of open space. The fact that these externalities are only *partially* reflected in the marketplace (such as a portion of local and state taxes and the cost of state financial aid to the central cities) further distorts economic factors and leads to economic inefficiencies. It may therefore be stated that public policies, especially in the United States, subsidize suburban and exurban development, raising the relative cost of development and revitalization of the central city. The Office of Technology Assessment concluded in its report (1995) that *"at a time when America's urban cores are struggling with poverty, unemployment, and deteriorating infrastructures, underwriting the costs of sprawl is particularly damaging."*

In the early part of the 21st century, the reality is that new residential developments surrounding some towns are typified by lot sizes varying from 2 to 10 acres or even larger, replacing the higher residential density of traditional urban areas and older suburbs. With their scenic beauty and perceived higher quality of life, these "gateway communities" have become a magnet for those looking to escape the congestion and decay of the inner city with its degraded quality of life. As a result, some residents, elected officials, planning professionals and scientists are expressing concerns about the effects of urbanization on open space, resulting in rapid conversion of prime farmlands, woodlands and even some wetlands, especially with accompanying environmental degradation.

The rapid and relatively uncontrolled growth commonly known as sprawl manifests itself in several ways. Michigan United Conservation Clubs identifies typical indicators and discusses in detail the critical issues these phenomena present. Among the more noteworthy are the following:

- Sprawl is primarily associated with population shifts rather than overall population growth.
- The number of households is increasing faster than the population.
- The population moving to rural areas tends to consist of younger, more affluent families with a high demand for services, while the population remaining in urban areas is disproportionately composed of elderly persons and minority residents.
- The correlation between sprawl and the conversion of farmland to other uses is clear.
- New residential development in rural areas tends to occur on large lots, with many lots in the 5- to 20-acre range.

- Rural local government frequently lacks the resources and expertise to deal effectively with increasing development pressure.
- Rural development tends to create increasing demands on transportation and public infrastructure, necessitating publicly financed improvements that induce more development.
- Rural development inevitably results in decreased environmental quality and the fragmentation of wildlife habitats.

Though this MUCC study was limited to the Saginaw Bay watershed in east central Michigan, the results reflect trends across the state. Other studies have provided comparable insights. A Southeast Michigan Council of Governments study of regional growth trends (1991) indicates that by the year 2020, a 6 percent population increase in that region will result in a 40 percent increase in land in urban uses. A statewide analysis of growth trends by the Michigan Society of Planning Officials predicts similar results in rural areas surrounding most urbanized areas in Michigan (MSPO, 1995).

2.3 Impacts of Urban Sprawl on Natural Resources

Much attention has been given to reports of sprawl's present and possible future effects on the natural resource base. Available data at the state and national levels regarding this phenomenon are increasing. Two of the most important trends are changes in household size and the reversal of the rural-to-urban migration trend dominant only a few decades ago. The Michigan Society of Planning Officials (MSPO) Future Trend Study and the Southeast Michigan Council of Governments (SEMCOG) both project increases in rates of urban land area growth that markedly outpace the rate of population growth in the next 25 years (MSPO, 1995).

According to a study by the USDA's Economic Research Service, the acreage of land conversion in urban areas per household has not risen significantly, but rather the number of households has risen more dramatically than population because of decreasing household size (Vesterby et al., 1994). The consumption of land for urban uses in more rural counties is, however, double that of urban counties, nearly 1 acre per household compared with 0.5 acre in counties classified by the U.S. Census Bureau as

metropolitan statistical areas (MSA). In the early stages of growth, before rising land prices bring about a leveling off or lowering of the urban area to household ratio, land consumption for new population growth and migration is even greater (Vesterby et al. 1994)².

At the core of this issue is the conversion of rural space, including wetlands, into residential lots, commercial developments and roads resulting from new settlement patterns. Estimates of the proportion of additions to urban land area composed of new residences vary, depending on the extent of present development. In many rural township sections, the proportion of new urban land use devoted to single-family homes is likely very high. The trend toward larger, more scattered rural residential lots with self-contained water and sewer service is well documented in Michigan. A recent survey of land parcels with new residential development in rural areas of Ottawa County indicates that the average residential lot is 5 acres. Revisions to Michigan's Subdivision Control Act (Land Division Act) may further result in increases in the number of large residential parcels in rural areas, depending on how local planning and zoning entities react to the new legislation.

The U.S. Department of Agriculture's National Resources Inventory (NRI) is conducted every five years. The latest NRI results, covering the period 1992-97, were released in 1999 and later revised. The 1999 NRI indicated that the rate of urbanization had doubled over the previous five-year period, representing a major increase in the rate of land development. Between 1988 and 1992, according to original NRI figures, 7.3 million acres of land were developed in the United States, while between 1993 and 1997, 15.9 million acres, more than 3 million a year, were developed. The revised NRI was released in January 2001, indicating that the previous estimates overstated developed land by more than 30 percent. Instead of an annual rate of land development that doubled to 3.1 million acres a year, the revised NRI finds that the rate of land development increased by 49 percent to 2.2 million acres a year. Some argue that this number may still be too high, but it appears more realistic given the rapid economic growth and prosperity of the 1990s.

Table 3 compares population growth and estimates of the amount of land developed in various fast- and slow-growing states and gives the ratio of land developed per new person in selected states. This is

one way to judge the compactness or “land use efficiency” of development. For the nation as a whole, the NRI estimate indicates that 0.87 acre of land was urbanized for every person added to the U.S. population, or about 1.7 acres per household. This is about double the estimate provided by the Economic Research Service.

The large variance among states, however, brings into question the validity of the NRI data. For example, Nevada comes in with an astoundingly efficient 0.08 acre per new resident, and smart growth states such as Maryland rank behind Arizona and Colorado, which are often cited as examples of sprawl.

Table 3. Reported comparative urbanization and development rates (USDA - NRI, 2001)

	Population increase, 1992-1997 (1,000)	Land urbanized, 1992-1997 (1,000 acres)	Acres developed per new resident
Nevada	344	26.7	0.08
Arizona	686	113.8	0.17
Colorado	431	112.5	0.26
Oregon	269	103.9	0.39
California	1,328	553.4	0.42
Texas	1,724	893.5	0.52
Florida	1,175	825.2	0.70
New Jersey	232	213.6	0.92
Maryland	190	177.6	0.93
Georgia	730	851.9	1.17
Ohio	190	364.8	1.92
New York	67	317.6	4.74
Pennsylvania	30	545.1	18.17

The issue of urban growth impact and management transcends concerns about the protection of wetlands and other environmental resources. It involves the entire breadth of the public policy debate, from public investment in infrastructure, land use and transportation efficiency to quality of life. It is clear, however, that environmental protection has not been adequately incorporated into the decision process. For example, the impact of urbanization on wetland conversion has

been significant. Michigan, as one of the states that has assumed federal wetland protection authority from the USEPA and the U.S. Army Corps of Engineers, has chosen to leave protection of wetlands of less than 5 acres and not contiguous to the Great Lakes or navigable waterways to local communities. This poses significant concerns of wetland fragmentation (critical size and migratory pathways) and the impact of urbanization on the natural features and biodiversity values present in many smaller wetlands (Schultink et al., 2000, and Schultink and van Vliet, 1997).

2.4. Environmental Impacts of Sprawl

Communities and individuals are increasingly realizing that current growth patterns may have significant impacts on the environment and their future quality of life. The EPA³ reports:

... Open space and farmland loss has been increasing at an alarming rate. Between 1982 and 1997, the United States lost almost 500,000 acres of "prime" farmland to development every year. This translates into 56 acres per hour, every day.

... Between 1980 and 1997, population growth increased at an annual rate of 1 percent, while vehicle miles driven increased 3.1 percent annually. Between 1990 and 1996, carbon dioxide, the major greenhouse gas contributor to global warming, emissions from transportation increased about 11 percent with transportation accounting for over 30 percent of all carbon dioxide emissions. Increased driving degrades air quality by increasing pollutants emitted from cars, vans, and trucks; adds significant amounts of carbon dioxide into the atmosphere, contributing to global warming; and impairs water quality through airborne pollutants deposited into water bodies.

As more land is urbanized, more surface area becomes impervious — affecting groundwater recharge and the volume and rate of surface water runoff. Urban runoff is responsible for 55 percent of environmentally impaired ocean shorelines; 46 percent of impaired estuary miles; and 21 percent of impaired lake-miles....

In addition to the environmental consequences are many fiscal considerations. A significant opportunity cost is associated with creating inefficient development while abandoning existing infrastructure in older developments. A recent study commissioned by the city of Reno concluded that city taxpayers subsidize development in unincorporated parts of Washoe County by more than \$12 million per year.⁴ These

subsidies are for new infrastructure and services for a rapidly expanding population. By comparison, the estimated monthly costs of telephone service in the central business district (CBD) were reportedly about half of those in the central city, while it costs 10 times as much to serve households on the urban fringe — yet customers' rates are equal. This subsidization of low-density development is similar for other services. These higher costs translate into inefficiencies and higher taxes. Ironically, higher urban tax rates are frequently cited as one of the major reasons many residents move to non-urban areas.

Since the 1950s, different land uses have increasingly become separated. In the absence of adequate public transportation alternatives, this has increased reliance on cars and road infrastructure. In other industrialized countries, gasoline and car license tax revenues are used to provide competitive public transportation alternatives with some success. In the United States, taxes on private modes of transportation are limited, and revenue is used mainly for road development and maintenance. This process facilitates, if not promotes, dispersed settlement patterns. Dispersed land uses do not facilitate walking or biking to stores, schools, workplaces, community centers or transit stations. It causes increased travel times, expenses, pollution and traffic congestion. As the U.S. Department of Transportation (1997) pointed out:

... From 1983 to 1995, the average length of work trips increased by 36 percent, reflecting the fact that jobs and housing have become increasingly segregated in recent years. Further, one quarter of all trips people make are one mile or less, but three quarters of these trips are made by car...⁵

Urban sprawl also conflicts with the needs of certain demographic sectors of the population. As reported by the EPA:

... Demographic changes including declining household size and the aging of homebuyers are increasing the market for compact, easy to maintain housing that is close to urban amenities. Married couples with children now account for only 26 percent of all households. This is down from 40 percent a generation ago. One-third of the home buying market is over the age of 45 years. According to a survey by the National Association of Homebuilders, most respondents in this age group want to live in communities with diverse incomes and access to transportation options⁶...

Obviously, these demands are difficult to satisfy with the existing residential development patterns.

Environmental impacts associated with land use conversions caused by sprawl are becoming an increasingly significant concern in urban and rural regions alike. These impacts are not well understood by the general public and vary from overextraction of groundwater resources by residential wells, groundwater contamination by nitrates and phosphates from private septic systems, and contaminated runoff caused by pesticide and fertilizer applications to contamination from industrial and commercial sources and toxic substances from poorly designed landfills. Land conversion during construction often leads to increased erosion and sedimentation of surface water bodies, as well as increased particulates in the air. Further, the increase of impervious surface areas reduces groundwater recharge rates, increases surface water runoff and flood risks, reduces open space, woodland and ecosystem habitat, and limits opportunities for recreation and tourism.

In an attempt to quantify some of these impacts, spatial models are useful in predicting the future patterns of these trends on the basis of specific growth scenarios and location characteristics that drive development. These characteristics may include existing infrastructure, distance to access points and prior growth dynamics to project future growth patterns. Of course, such growth simulations are based on certain assumptions and may not account for all political factors and variations induced by economic circumstances.

Urban growth projections for Michigan are provided in Fig. 3 (page 39) using a land transformation model developed at Michigan State University by Pijanowski et al. An overlay of these growth scenarios with existing (prime) farmland, woodlands and wetlands makes it possible to estimate potential acreage lost by land conversions. On the basis of these projections for 2020 and 2040, it is estimated that should these growth patterns materialize, Michigan will lose another 15 percent of farmland (of which a large percent is prime farmland), and forestland will decline by up to 7 percent, with the greatest loss (as much as 25 percent) projected for southern Michigan. Moreover, many of Michigan's wetlands of five acres or less may be lost to development unless wetland ordinances are enacted and enforced at the local level.

As shown, most urban sprawl is concentrated in southeastern Michigan. Though the largest contiguous region of growth occurs in the greater Detroit area — including Flint, Pontiac and Ann Arbor — the process and impacts are present throughout the southern portion of the state — along the Grand Rapids, Lansing, Kalamazoo, I-96 corridor and the tri-city region around Saginaw Bay. Rapid growth is observed around other growth centers such as Traverse City, Petoskey and Marquette. The most significant impact is on agriculture, Michigan's second most important economic sector.

Early population settlement occurred near prime farmlands in southern Michigan, and now open space in northern Michigan is being converted at a rapid pace. Almost all of Michigan's central cities have lost residents — some through out-of-state migration — since their past population peaks, most notably Detroit (-46 percent), Benton Harbor (-38 percent), Saginaw (-34 percent), Bay City and Flint (-32 percent) and Jackson (-30 percent). Since 1950, only Ann Arbor (+62 percent), Holland (+110 percent) and Midland (+179 percent) expanded — also by successfully annexing new subdivisions (Rusk, 1999).

Urban depopulation typically coincides with a transformation of the inner city, characterized by an

influx of minority populations, racial segregation, deteriorating housing stock and an increase in crime rates. In 1990, Michigan's 11 metropolitan housing markets had the highest indices of racial segregation among the 50 states. High crime rates, poorly performing schools, deteriorating infrastructure and falling property values motivate many middle class residents to move to the suburbs, characterized by safer neighborhoods and better schools, service facilities and infrastructure. This process poses a disproportional tax burden on inner-city residents. For instance, a national study shows that for every 1 percent increase in the local poverty rate, the cost of police protection per resident increases by an average of 5.5 percent (Rusk, 1999).

2.4.1 Wetland Impacts and Losses

The U.S. Environmental Protection Agency (EPA) identifies urbanization as a major cause of wetlands impairment. Urbanization has resulted in direct loss of wetland acreage as well as degradation of wetlands. Although wetland protection initiatives have reduced the rate of wetland loss, the federal “no net loss” policy objective has not been met (Fig. 4). In fact, in Michigan, wetlands smaller than 5 acres are not protected by state law and require local protection in

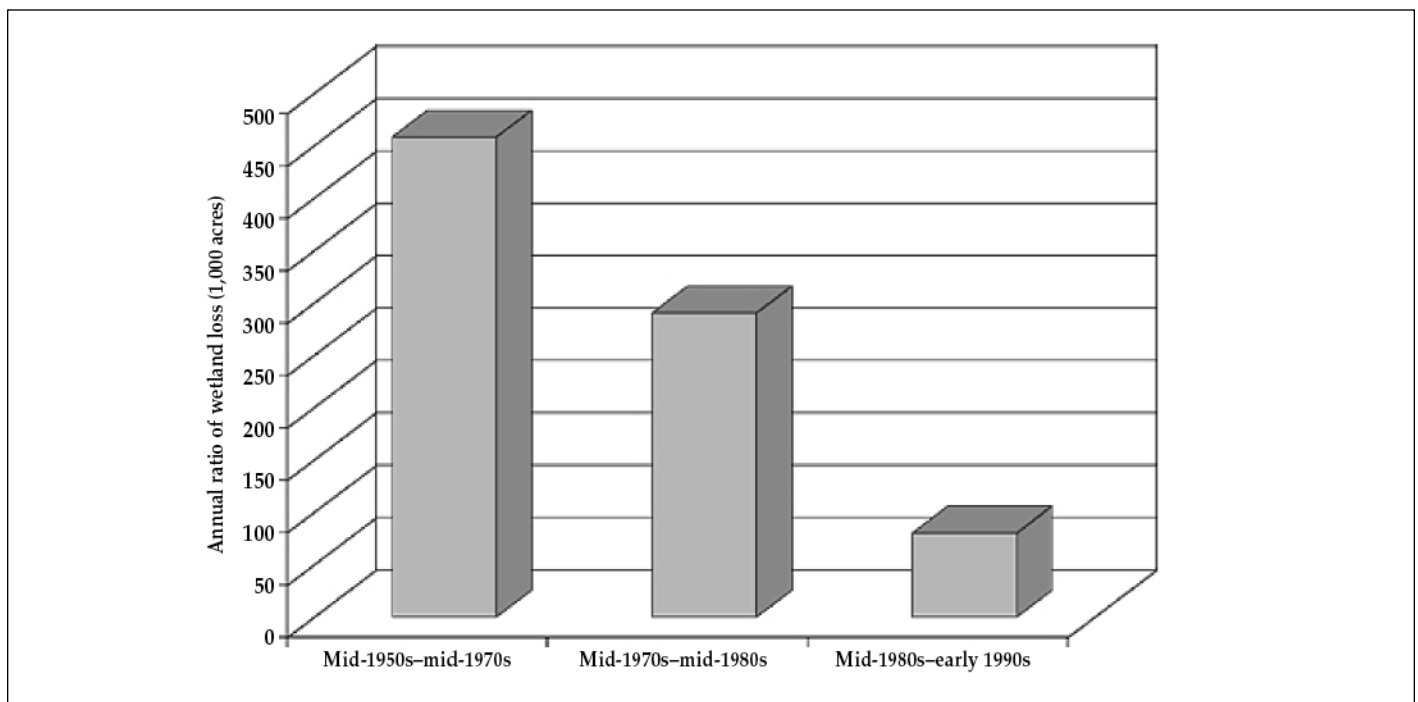


Fig. 4. U.S. wetland loss rates since the 1950s (USDA/NRI).

the form of an (optional) local protection ordinance, if they are located in a county with more than 100,000 people and a local wetlands inventory.

The U.S. distribution of wetlands losses coincides with areas of high agricultural activity that are subject to open space conversion (Fig. 5) (page 40). A high level of wetland loss is found in the southern region of the Great Lakes where most urban expansion has occurred.

Coastal wetlands are among the most productive ecosystems in the world, comparable to tropical rainforests and coral reefs. An immense variety of microbes, plants, insects, amphibians, reptiles, birds, fish and mammals is part of coastal wetland ecosystems. Wetlands provide many food sources that attract and support a complex fauna. The combination of shallow water, high nutrient levels and high primary productivity is ideal for the development of organisms that form the base of a food web that supplies many fish species, shellfish, insects, amphibians, birds and mammals. The shallow water and sometimes dense plants are also ideal for sheltering animals from predators. Coastal wetlands also filter sediment and chemicals, reducing the amount of pollution that washes into estuaries.

Runoff containing heavy metals may bioaccumulate in estuarine wetlands, causing deformities, cancers and death in aquatic animals and their terrestrial predators. Heavy metal ingestion by benthic organisms (including many shellfish) in estuarine wetlands occurs because the metals bind to the sediments or the suspended solids that such organisms feed on or settle on the substrate where such organisms live. Urban and industrial stormwater, sludge and wastewater treatment plant effluent, rich in nitrogen and phosphorus, can lead to algal blooms in estuaries and oxygen deprivation. Some algae are toxic to aquatic life.

2.4.2 Construction of Impervious Surfaces

To accommodate sprawl, open space is converted not only to residential use but also to commercial development with parking lots and into roads. As is evident in Table 4, the trend indicates that over an eight-year period, increasingly more impervious surface is created to accommodate a single building permit. This factor has increased by about 20 percent for commercial use and by about 55 percent for road construction.

Table 4. Conversion of open space to commercial and roadways (NRI).

Building activity in the United States	Residential building permits	Sq.ft. commercial (1,000)	Miles of roads built
1988-1992	6,508,900	9,630,000	27,723
1993-1997	6,665,600	11,571,000	42,886

Increasing the amount of impervious surface and associated land uses in expanding developments prevents rainfall from percolating into the soil and increases runoff rates dramatically if no other on-site storage capacity, such as retention ponds, is provided. Rainfall and snowmelt carry sediments, manure and other organic matter, pesticides and fertilizers, heavy metals, hydrocarbons, road salts and debris into streams and wetlands. This causes increased salinity, turbidity and toxicity, and decreases dissolved oxygen, affecting aquatic life. All these inputs and nutrients can lead to pollution and eutrophication of wetland and surface waters and cause groundwater contamination.

As runoff moves over warmed impervious surfaces, the water temperature rises and the dissolved oxygen content of the runoff water decreases. Increased water temperature and lower dissolved oxygen levels can cause stress or increase the mortality of aquatic organisms. Rising water temperatures can trigger the release of nutrients from wetland sediment. If the temperature rises, excess phosphates stored in the soil profile and sediments will be released at an exponential rate. Thus water temperature increases can, in turn, cause eutrophication. This problem is further magnified by the potential for algae blooms if high phosphate levels are present in surface waters. When this happens, oxygen levels drop and fish kill is likely. This may happen as a secondary effect if, for instance, high phosphate levels are present from agricultural sources.

An increase in hard surfaces also decreases the water recharge potential within a watershed and can reduce water flow into wetlands and the hydroperiod — the duration of saturated surface conditions permitting groundwater recharge. Significant increases in stormwater peak flow rates may cause erosion and

channelization in wetlands, as well as alteration of species composition and decreased efficiency in removing pollutants. Changes in the frequency, duration and timing of the wetland hydroperiod may also adversely affect spawning habitat and the migration and composition of aquatic and terrestrial species.

2.4.3 Impacts of Wastewater and Stormwater Drainage

Wastewater treatment plant effluent and urban stormwater are potential sources of pollutants that may degrade wetlands. The "aging" of wetlands can occur when wetlands filter organic matter and other inorganic material that accumulates over time. Aging is the saturation of the ecosystem by nutrients and heavy metals. It results in the reduced effectiveness of natural filtration and denitrification capacity and more rapid degradation of the wetland (Mitsch and Gosselink, 1986). High nutrient levels may cause extended eutrophication, and metals may cause plant and aquatic organism toxicity. Iron and magnesium, in particular, may reach toxic concentrations, immobilize available phosphorous and coat roots with iron oxide, preventing nutrient uptake.

2.4.4 Construction of Roads and Bridges

Roads and bridges are frequently constructed across wetlands because less disruption to adjacent land uses occurs and wetlands have low monetary and compensation value. It is often considered to be more cost effective to build roads or bridges across wetlands — especially smaller ones — than around them. Roads can impound a wetland by severely altering drainage conditions over the long term, even if culverts are used. Some of these inadvertent impoundment and resulting hydrologic alterations can destroy more mature vegetation and alter wetland functions. Road and bridge construction activities can increase sediment loading to wetlands (Mitsch and Gosselink, 1993). Roads can also disrupt habitat continuity, providing habitat for hardier, opportunistic edge and non-native species at the cost of driving out more sensitive interior species. Roads can impede species movement or result in increased mortality for animals crossing them. Borrow pits (used to provide fill for road construction) that are adjacent to wetlands can disrupt local drainage and groundwater tables and

degrade water quality through sedimentation and increased turbidity.

The fragmentation effect of infrastructural improvements is increasingly recognized. For instance, in Europe, a new thrust is developing to reconnect isolated ecosystems by restoring migratory pathways through highway overpasses or the building of underground passageways under secondary roads between isolated wetlands and nature preserves. Plans even call for the construction of a Europe-wide ecosystem network connecting important and critical habitats.

The maintenance and use of roads contribute many chemicals into the surrounding wetlands. Rock salt used for deicing roads can damage or kill vegetation and aquatic life. Herbicides used along roadways can damage wetland plants, and the chemicals may concentrate in aquatic life or cause mortality. Runoff from bridges can increase loadings of hydrocarbons, heavy metals, toxic substances and deicing chemicals directly into wetlands. Bridge maintenance may contribute lead, rust (iron), and the chemicals from paints, solvents, abrasives and cleaners directly into wetlands below.

Appropriate land use planning and subdivision design may reduce the need for new road construction. Innovative methods of constructing roads and bridges and the creation of migration pathways (varying from fenced pathways connecting to small wildlife tunnels to major wildlife overpasses across highways, as used in the Netherlands) can reduce the impacts of urbanization on wetlands and nature habitat.

Although wetlands are usually among the natural areas most susceptible to environmental degradation resulting from sprawl, other natural areas must be considered as well. Forested areas and open space, particularly in the southern part of the state and in areas experiencing rapid growth, are at risk to new development.

2.4.5 Forest Resources

The Michigan Department of Natural Resources notes that the forest industry in Michigan supports approximately 150,000 jobs and adds over \$9 billion to the economy when tourism and recreation are included. It also provides benefits that include habitat for flora and fauna, recreational and sightseeing

opportunities, filtration for air and water quality, and timber.⁸

Michigan's woodlands are also at risk of fragmentation of habitat, parcelization, second home development and incompatibility with surrounding uses. Forest fragmentation and parcelization lead to loss of aesthetics, recreation, wildlife habitat, forest-based employment and harvested forest products, and to increased pressure on infrastructure. Viable forest management operations for timber production require contiguous blocks greater than 40 acres in size. Examples of privately owned woodlots meeting size and quality requirements are rapidly disappearing in Michigan. Dividing the forest into 5- to 10-acre parcels that are used for residential development essentially removes the resource from commercial harvest consideration. Fragmentation also results in many adverse effects on interior species of wildlife (e.g., neotropical migrant birds) and vegetation, opening niches for more common and potentially invasive species.

Forested areas are sought after by both primary and secondary home owners. Parcels of land in rural areas that contain woodlots generally sell for higher prices than open land, and so-called premium lots containing mature trees are in demand. To maximize the number of premium lots, developers break up blocks of woodlands into 1/4 -acre lots with extensive road networks. Communities in northern Michigan experiencing a boom in second-home development face inadequate services and infrastructure, as well as complaints from new residents about the impacts of nearby timber and wood-processing operations.

2.4.6 Impacts on Natural Resource-based Recreation and Tourism

Sprawl also affects forest- and natural resource-based recreation and tourism in Michigan. This industry represents a significant contribution to the annual economy, particularly in and around communities that base much of their economy on recreation and tourism.

Sprawl affects the experience consumers seek at the tourism destination and in transit to the destination. Popular destinations such as Traverse City, Harbor Springs and Ludington are becoming meccas for second-home and retirement development. Many of

these communities are experiencing the same characteristics and patterns of sprawl as those in southern Michigan. Indeed, part of the tourism experience is in the trip, as well as the destination. Travelers to the recreation and tourism destinations are increasingly subjected to the characteristics and patterns of sprawl as they pass communities that are rapidly growing.

2.4.7 Impacts on Extractive Industries

Like agricultural and forestry practices, mining and materials processing operations are also being adversely affected by sprawl. Sand and gravel operations in southern Michigan and hard-rock mining in northern Michigan are often characterized by loud sounds, particulate emissions, changes to the landscape, truck traffic and so on. New residents located near such facilities often complain about the operations. Continued urban development in areas containing economically viable extractive resources will limit options available to the industry.

3. Population, Land Use Trends and Policy Issues in the Great Lakes Region and Michigan

Michigan is an integral part of the Great Lakes region, which comprises the U.S. states and Canadian provinces adjacent to the Great Lakes and major tributaries. The region is characterized by the largest freshwater ecosystem complex of the world. Its vast terrestrial and aquatic resources provide the comparative advantage on which the economic prosperity, high quality of life and relatively high environmental quality of the Great Lakes region are based. However, changes in population and regional land use trends have had significant consequences for the Great Lakes basin. It is important to view these changes from an international perspective and quantify both the causes and the impacts as a cooperative effort between the United States and Canada and among all the states and provinces affected.

3.1 The Great Lakes Region

The vast natural resources of the Great Lakes basin have induced the development of an industrial economy. The lakes provided transportation links and water for industrial processes and the opportunity to dispose of wastewater. The availability of natural resources, from lumber to iron ore, and a growing population provided the comparative advantage for industrial development and a rapid economic growth for most of the 19th and 20th centuries.

Since World War II, the North American information-based economy has resulted in a comparative decline of the manufacturing sector. Road and air transportation increased at the expense of shipping and rail transport, increasing the mobility of firms in search of lower labor cost and taxes while modernizing less efficient operations. The restructuring of the regional economy has resulted in a surplus of industrial locations that are frequently contaminated and require environmental remediation before again being put to productive use. These "brownfield" sites — vacant industrial or commercial properties with known or suspected contamination — pose special challenges because the potential redevelopment benefits must be weighed against the cost of remediation and redevelopment and the potential legal liability. In recent years, Michigan has established agreements assuming potential legal liabilities to encourage redevelopment of brownfield sites (Szymecko and Voice, 2002). Redevelopment of brownfield sites presents an exciting economic development opportunity for high-technology manufacturing, commercial services, and residential or leisure land uses, while reducing the demand for land transformation outside urbanized areas. Across the region, however, the costs and environmental concerns of site restoration by the private sector or local governments remain high.

3.1.1 Agricultural Land Use

About a third of the land in the Great Lakes basin is used for agriculture, concentrated primarily in the southern half, where most of the U.S. agricultural land is located. (Thorp et al., 1996). Within the basin, erosion and sedimentation, pesticides and nutrient loadings of the Great Lakes and tributary rivers are a leading cause of pollution. Agricultural production is increasingly concentrated in larger farms with more intensive crop production. Throughout the region,

overall livestock numbers and farmland acreage are declining, and the typical family farm is giving way to the large farm and the hobby (part-time) farm. In the period 1981-1991, regional farmland declined by almost 10 percent. Conversion of agricultural land (some of which is prime farmland) to non-agricultural use is causing a shift to less productive soils, shorter growing seasons and greater distances to major markets. An increasing demand for organically grown produce is resulting in a growing market share. At the same time, farmers are switching to environmentally conserving practices such as conservation tillage, integrated pest management and improved manure management practices. Efforts at controlling nutrient and pesticide pollution of tributaries to the Great Lakes have been partially successful. Groundwater contamination is now recognized as a serious environmental problem that requires even greater attention to farm pesticide and nutrient/manure management.

Land use conflicts — notably the conversion of farmland — continue to be viewed as one of the greatest threats to the long-term viability of the agricultural sector. The greatest challenge to planners and municipalities is to resist pressure for land conversion into large-acreage lots to meet demand for residential use and expansive retail areas. Protection of farmland from the encroachment of rural and urban sprawl is not commonplace throughout the basin, although in some areas successful efforts are taking place. In Michigan, limited initiatives in restricting development by purchasing development rights take place. For instance, in some parts of Traverse County, farmland is effectively preserved. The very limited availability of state funding and the requirement to raise local taxes results in few effective preservation measures. In Ontario, a new provincial policy statement on land use (1996, section 3, Ontario Planning Act) permits expansion into prime agricultural areas "only where: 1) there are no reasonable alternatives which avoid prime agricultural areas, and 2) there are no reasonable alternatives with lower priority agricultural lands in the prime agricultural area" (cited in Thorp et al., 1996).

3.1.2 Regional Land Use Trends

More than 33 million people live in the Great Lakes region, with about 80 percent in 17 metropolitan areas (11 in the United States and six in Canada). The U.S.

basin population declined during the 1980s but has now stabilized. By contrast, the Canadian population in Ontario has increased dramatically over the past 20 years. Most of this development is situated on or near the shores of the Great Lakes or its major tributaries. The greater Toronto area, for example, concentrates more than 40 percent of Ontario's population on 1 percent of the province's land base (Thorp et al., 1996).

Ontario's population is projected to increase by about 2 million people (20 percent) over the next 20 years (Thorp et al., 1996). This growth is fueled by economic development coupled with continued immigration. In contrast, the U.S. portion of the basin will likely experience limited population growth. The trend of redistribution of economic activity and population from the older industrialized regions of the Great Lakes basin to newer and expanding regions seems to be moderating. Central city areas will continue to suffer from an underutilized and decaying infrastructure and social problems (crime, educational and service sector quality), whereas coastal areas will continue to grow and improve in standard of living.

Although urban sprawl has been the dominant form of development, interest is growing in a return to higher density, mixed-use community planning and redevelopment of underutilized or brownfield locations that would enhance the efficiency of municipal services such as transportation. Planning systems and approaches that can compensate for the fragmentation of municipal decision making will be fundamental to curbing urban sprawl.

Physical infrastructure access and costs, most notably water supply and sewage treatment and their environmental impacts, may restrain new development. Groundwater availability and quality concerns may serve to limit new growth. Some communities not adjacent to the Great Lakes or other adequate freshwater resources may advocate water conservation and higher prices to reduce usage or advocate increased access to water from the Great Lakes. Some of these conflicts over water rights will result from request from southwestern states wanting to transfer water out of the region.

3.1.3 Land Use Concerns

Various concerns over land use conflicts and their trends and impacts have been expressed by citizen groups, government officials and practitioners within

the region. In the following sections, some of these concerns are summarized by major categories. Specific concerns identified by means of a public survey (MSU-IPPSR) are discussed in section 3.3.

3.1.3.1 Coastal Zone Development

The U.S. National Oceanic and Atmospheric Administration (NOAA) defines the Great Lakes as a coastal zone. Development along the shores of the Great Lakes parallels concerns expressed in many coastal zone development impact studies. Its location and features are the major draws for settlement and economic development. These include access to freshwater resources, proximity to water for transportation and industrial needs, and its appeal for residential and recreational purposes. The latter fueled the construction of second homes, especially since the 1950s.

About 80 percent of the population of the Great Lakes basin is concentrated in the largest metropolitan areas, most of which are located along the coast. This coastal environment provides the most sensitive and diverse land and water interface, representing the biological gradients of dry/wet, high/low, nutrient-rich/poor, and with special terrestrial and aquatic ecosystems and flora and fauna. Human occupation and development alter these ecosystem processes. Alterations range from changes in stream flow, sedimentation, erosion and nutrient modification to temporary or permanent contamination of land and water resources.

Proper land use planning together with long-term guidelines and management strategies and regulations as a coordinated activity among all levels of government and multiple jurisdictions is essential to reduce or mitigate impacts. This includes development of key environmental indicators and information sharing among all parties to promote sustainable land use, its guidance and control, and the prevention and mitigation of contaminated sites, all elements of an effective environmental management process. This process includes the promulgation of voluntary, non-regulatory and regulatory initiatives to implement land use policies together and in full consultation with all affected groups.

3.1.3.2 Urban Sprawl

As in Michigan, the most significant land use issue in the Great Lakes basin and surrounding region is the continuing growth and development of major

metropolitan areas and the virtually uncontrolled expansion of low-density residential areas and associated retail and service centers. Its consequences are increasingly well-known and understood. They include reduction of open space, pollution, higher energy use and cost, encroachment on and conflict with agricultural land use, environmental impacts on natural areas (especially wetlands), and an expensive and expansive physical infrastructure promoting an unsustainable future.

This development is characterized by a decentralizing of manufacturing, retail and service functions along urbanized corridors between urban cores surrounded by low-density development. It is typified by road transportation; poor public transportation options; interstate truck transport; one-story schools, service and industrial buildings; sprawling office parks, retail centers and parking lots; and large-lot housing with individual wells and on-site septic disposal. From a socioeconomic standpoint, sprawl has exacerbated deepening divisions along racial and economic lines.⁹

3.1.3.3 Farmland Conversion

Thorp et al. (1996) report that land classified as farmland — which includes cropland, woodland and permanent pasture categories — declined in the Great Lakes basin by more than 1.8 million hectares (4.5 million acres) in the 10-year period from 1981/82 to 1991/92. Much of this land conversion surrounds metropolitan areas and increasingly includes their rural hinterlands with small communities. For example, in Michigan, 70 percent of the converted farmland acres between 1982 and 1992 were located near three urbanized areas — the metropolitan areas surrounding Detroit, Grand Rapids and Kalamazoo. The total 345,000-hectare (850,000-acre) decline in Michigan farmland during the decade included 121,500 hectares (300,000 acres) of cropland, much of it with a prime soils classification. A governor's task force estimated that this impact represented a potential loss of \$60 million to \$120 million in gross sales per year. If significant levels of farmland conversion continue unabated in the Great Lakes basin, the agricultural production base will decline and, with it, future farming opportunities. Given the fact that nearly two-thirds of basin cropland is located within a 50-kilometer (about 30 mile) radius of medium-sized cities and large metropolitan areas, efforts to preserve farmland may also help contain sprawling

development and maintain the long-term viability of the agricultural sector with its value-added economic opportunities.

3.1.3.4 Brownfields

Since the Great Lakes regional economic transition from forest exploitation, extraction and heavy manufacturing to a more diverse and increasingly service-oriented economy, abandoned and sometimes severely polluted manufacturing sites are plentiful. Of the thousands of sites remaining, many represent — together with their surrounding low-income housing stocks — areas of urban blight and neglect and, frequently, a source of continued pollution. In many areas, redevelopment is often hampered by high cleanup costs, uncertain liability issues and inability to assemble sufficient space for a new development from individual parcels, encouraging, instead, development of undeveloped areas or “greenfields.”

The state of Michigan may assume legal liability for these properties, but this is not the case in many other states. One policy option is to link the redevelopment of brownfields with the development of greenfields by charging environmental impact fees or assessing special charges to developers to pay for the costs of new infrastructure for site development. The revenue could be used to establish a brownfield redevelopment fund to encourage the use of existing sites. Funds could also be used to purchase open space subject to development pressures or, in the case of farm or woodland, acquire development rights.

3.1.3.5 Agricultural Management Practices

The Great Lakes Basin Agricultural Profile¹⁰ states that soil erosion and sedimentation, agricultural pesticide use and manure management are three land use issues that pose significant implications for water quality and the economic viability of the agricultural sector.

Most of the soil erosion and sedimentation in tributary rivers and streams of the Great Lakes is human-induced. Though agricultural practices are the primary cause, construction activity and the increase of impervious acreage also contribute to increased runoff and sediment loads. This process is exacerbated by inefficient nutrient, water, manure and pesticide management practices and policies that result in substantial economic costs and environmental degradation. Frequently, agricultural productivity may be reduced, resulting in lower yields and/or

higher fertilizer, pesticide or irrigation requirements. Resulting sedimentation degrades water quality and aquatic habitat, reduces species regeneration, limits water resource availability and incurs infrastructure costs such as those presented by dredging of navigational waterways or drainage pathways.

The World Wildlife Fund reports that agriculture in the Great Lakes basin uses an estimated 26 million kilograms (58 million pounds) of pesticides annually. Herbicides represent about two-thirds of the pesticides, but perennial specialty crops such as tree fruit tend to have more insect and disease problems than field crops grown in rotation and receive higher levels of insecticide and fungicide. Production areas for specialty crops are typically concentrated in coastal counties where microclimate factors and soil conditions favor their production. Although usage of pesticides for agriculture is declining — the decline is attributed mostly to changes in application rates — the risk of pesticide exposure to wildlife and human health is a matter of public concern.

The agricultural land use trend is one of fewer livestock farms with larger concentrated holdings and resultant manure storage and application problems. Although farm management restrictions are limited, especially in the United States, increasingly farms must confront manure-related issues ranging from storage and odor control to crop nutrient management. These restrictions are generally less severe than those in some west European countries. Other problems such as waterborne pathogens connected to manure may also cause serious public health concerns. The farm animal population in the Great Lakes basin produces an estimated 80 million metric tons of manure each year, about 20 times greater than the volume of human excreta in the basin (Thorp et al., 1996). The large amounts of manure from livestock concentrations degrade water quality through runoff and related phosphorus loadings that cause algae bloom and oxygen deprivation, as well as nitrate leaching into groundwater. In some areas of Michigan, nitrate levels exceed the federal advisory water standards. The use of manure as a fertilizer for crops is a long-standing practice, but the increased application rates and their timing — sometimes in combination with inorganic sources such as anhydrous ammonia — have produced soil nutrient levels well beyond the uptake capacity of crops. Transporting manure for use on more distant farms or to more mineral soils lacking nutrients — the so-called “manure banking” — has

been tried in the Netherlands and is not considered economical.

3.1.3.6 General Landscape Impacts of Urbanization and Agricultural Development

As pointed out earlier, urbanization and the creation of impervious surfaces increase runoff and reduce groundwater recharge. This impairs the ability of wetlands, soils and natural systems to cleanse runoff, increases the potential for flooding and erosion, and contributes to the degradation of streams and lakes. The best way to minimize imperviousness and its impacts on a regional scale is to concentrate development in higher density clusters or urban centers — not unlike the “compact city model” promoted by some planners in northwestern Europe to preserve urban vitality and quality and maintain efficiency of service provision.

Another aspect of development in the agricultural sector is the channelization of streams to improve drainage. In the United States this is a prevalent practice in many lowland areas. For example, in states such as Florida this has had a major effect on the large wetland areas such as the Everglades and their wildlife populations. Restoration of the natural stream flow is a slow and expensive process for which the U.S. federal government allocated in excess of \$2 billion in Florida alone in 2001. The practice continues in states such as Michigan, implemented by county drain commissioners. Some people argue that in drier years, such as 2002, this practice jeopardized agricultural productivity by excessively draining surplus moisture too early in the spring to have it available in the root zone during the actual growing season.

The development induced by interstates and other primary highways has not only changed how people and goods move but raised assessed property values because of their perceived resale location near major transportation systems. These high property values make such high tax parcels attractive and affordable only to commercial investors rather than residential property owners. Therefore, they have a significant effect on development and land use patterns in the Great Lakes basin — development requires infrastructure and infrastructure induces development. Since the 1950s, much suburban expansion has been facilitated by new highway construction and private modes of transportation. This expansion is financed by all citizens, not only the primary beneficiaries.

3.2 Michigan Population and Land Use Trends

Michigan's population growth slowed significantly in the past decades, and its acreage in agricultural production was reduced (Michigan Planning & Zoning Center, Inc., and the Land Information Access Association, 1999). Between 1980 and 1990, the population of Michigan grew only 0.4 percent (about 33,000 persons), but between 1982 and 1997, more than 1,124,000 acres of farmland were lost. This is considerably more than the size of the state of Rhode Island and more than a country such as the Netherlands has reclaimed in new agricultural land from the sea since World War II. Part of this population trend was caused by the economic recession and high unemployment rates of the 1980s and resulting out-migration of more than 380,000 persons, primarily to southern states.

The process of out-migration reversed in the 1990s, resulting in a population increase of about 480,000 persons during 1990-97, about 5.2 percent. Even during the recession of the 1980s, however, some communities in southern Michigan experienced rapid growth due to population concentration in the rural townships and suburbs — more than 30 communities experienced growth of more than 30 percent in the 1980s and early 1990s. This process was fueled by population decline of the central cities — Detroit, Flint, Saginaw and Grand Rapids lost a combined total of about 209,000 persons in the 1980s. In-migration to Michigan was negative between 1970 and 1990, and total population grew by only 5 percent, so the state's population is largely just relocating in more urbanized areas. Of Michigan's current population of about 10 million people, about 82 percent live in urban or "central city" and suburban counties. The urbanized portions of these counties occupy about 10 percent of Michigan's land.

Michigan's suburban counties are the fastest growing in the state, adding 346,074 people, or 10.3 percent, between 1980 and 1995 (Fig. 7, Stanley, 1996^b). Rural counties also grew at a rate of 8.3 percent from 1980 to 1995, or 127,718 persons, while central-city counties — those counties with a large identifiable urban core, such as Detroit or Kalamazoo — experienced a loss of 4.3 percent, or 186,417 persons. People are leaving the most heavily populated counties in Michigan and moving to less populated counties nearby.

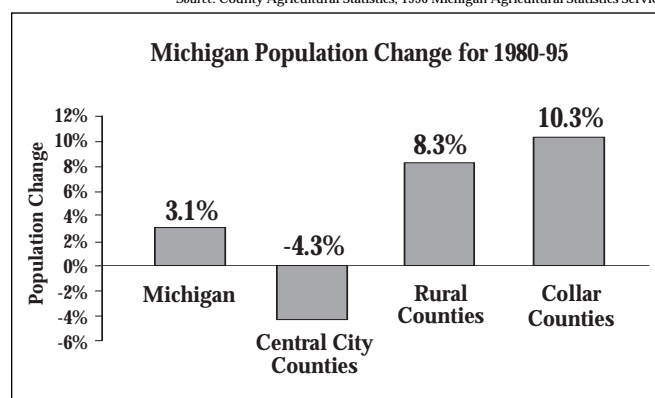


Fig. 7. Population change in Michigan, central-city counties, rural counties and suburban counties in the 1980-95 period (adapted from Stanley, 1999^b).

Michigan's land area is 37.4 million acres, of which 10.4 million acres (27.8 percent) are metropolitan areas. Still almost two-thirds of the land within these metropolitan areas is considered non-urban, providing a rural and open space character to some of the urbanized counties. This includes substantial tracts of open space, pasture and farmland. For instance, even Wayne County, the location of the largest urban agglomeration, Detroit, still has 17 percent of its land in forest, cropland, water or pasture (Michigan Planning and Zoning Center, 1999). Overall, about 23 percent of Michigan's land is devoted to urban uses, including parks, golf courses and roads.

Michigan's agricultural acreage has been decreasing from about 18 million acres in the early 1950s to about 10.5 million in 2000 (Fig. 8). Although the rate of farmland loss has been declining more recently, it represents a total loss of more than 41 percent. Stanley (1999^b) identifies various rates of decline prevalent in the 1950-90 period, ranging from a high of 17.5 percent to a low of 2.8 percent (Fig. 9). If one assumes a loss rate of 2.8 percent, this equates to a loss of 294,000 acres per year. Estimates by various sources, including the Michigan Planning and Zoning Center, report a loss of about 240 acres per day, 87,600 acres per year, or about 1 percent. Cantrall and Schneider¹¹ reported a loss of 75,000 acres per year in the Great lakes Bulletin (August 2000), while Wayne Wood, president of the Michigan Farm Bureau, cited a loss of 600,000 acres over the 1987-97 period in a letter to the Detroit News (July 30, 2003). The USDA census of 2002 lists a 360,929-acre loss over the 1997-2002 period¹², or about 72,000 acres per year — still around 200 acres per day. It is clear that the actual loss rate has been declining recently, though it is still alarming to many.

Traditional urban development, once characterized by high population densities and more efficient city services, has virtually disappeared. World War II, the returning forces, the baby boom, rapid economic growth, the emergence of the federal freeway system and the mobility of private transportation facilitated the widespread emergence of urban sprawl. This process is typified by local governments competing for economic expansion and enhancement of the local tax base, thereby accommodating zoning changes and new developments. However, new regional approaches to tax revenue sharing (e.g., the Minneapolis-St. Paul area) or county-based approaches to planning and zoning (e.g., Georgia and Atlanta) may deter uncontrolled development.

Today, urban sprawl is the predominant pattern of regional development. Land use projections for Michigan indicate that a state population increase of less than 12 percent may result in as much as an 87 percent increase in newly developed land by the year 2020. A 6 percent population increase in southeastern Michigan alone is expected to result in a 40 percent increase in land consumption.

Beginning in the 1960s, the pattern of land development in Michigan began to change markedly. Compact urban development on small lots gave way to larger lots dispersed across the countryside. Commercial development also began to change, with the concept of the shopping center replacing the downtown commercial districts that had previously characterized communities. Even before the term found its way into common usage, the trend toward urban sprawl had begun in earnest.

The positive and negative aspects of sprawl are the subjects of considerable debate. The decay of older urban communities is an obvious result of sprawl, as are the losses of farmland and forestland and the increasing problems related to traffic and public services. Conversely, sprawl development is being driven by high consumer demand. A recent survey of Michigan residents indicates that nearly half of the respondents desire large-lot residences and dispersed

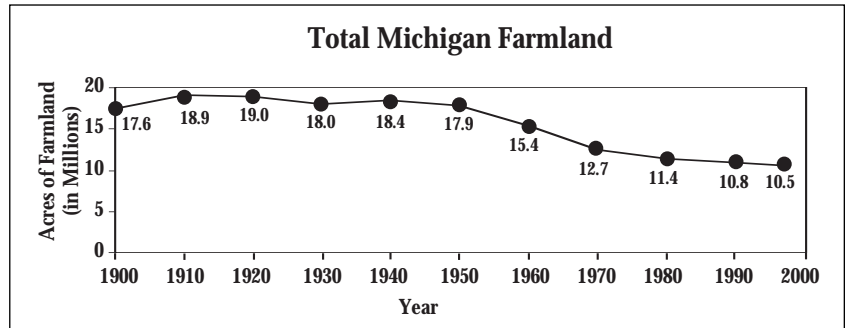


Fig. 8. Actual loss of Michigan farmland acreage, representing a total loss of 41 percent since the 1950s.

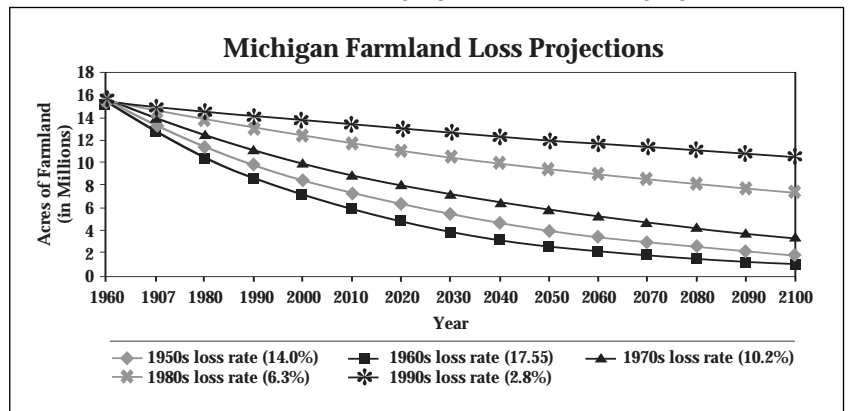


Fig. 9. Alternative projections of Michigan farmland acreage loss using prevailing trends in the 1950-90 period (adapted from Stanley, 1999).

rural development¹³. Commercial and industrial development must of necessity follow the workforce to compete for business and skilled labor. Sprawl, then, creates its own spiral effect, with development following development and pushing the urban boundary farther out into the countryside. In the 1980s and 1990s, urban and suburban sprawl became rural sprawl, converting rural areas on the urban periphery into large residential lots of 5 to 10 acres, converting agricultural land at an increasing rate.

Curiously, while planners and local government officials acknowledge urban sprawl as a serious problem, the issue attracted little attention from policy-makers at the state and federal levels until the late 1990s brought the nationwide advent of so-called "smart growth" strategies.

3.3 Public Perception of Land Use Issues

In 2001, the MSU Institute for Public Policy and Social Research interviewed 1,001 Michigan adult residents about urban growth concerns (margin of error 3.1 percent). Respondents were randomly split into two samples — one group responded to questions about Michigan cities in general and one group to questions about the city of Detroit.

About 70 percent (Fig. 10) indicated that the quality of cities in general was very important or somewhat important (28 percent) to the general well-being of Michigan (46 and 44 percent, respectively, for Detroit).

When asked to assess the shape (condition) of Michigan cities/Detroit, 42 percent said Michigan cities were “good” or “very good” and 43 percent said they were “fair.” Some 20 percent said Detroit was “good” or “very good” and 50 percent rated it “fair.”

Approximately 85 percent of respondents supported financial incentives from state government to encourage greater local cooperation. More than 71 percent supported the consolidation of local governmental units if it would improve efficiency or services.

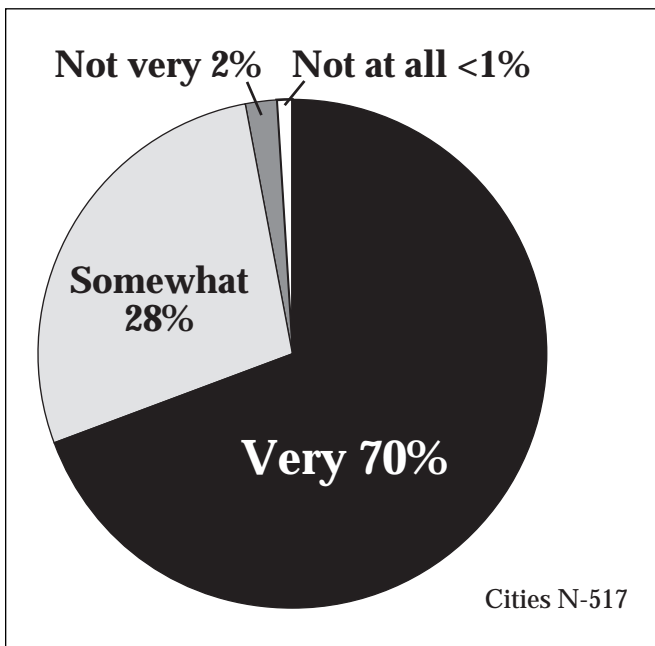


Fig. 10. Citizens' perceptions of the importance of city well-being (quality) to the overall well-being of Michigan (MSU IPPSR, 2001, online).

On the responsibility for maintaining or improving the quality of Michigan cities (Fig. 11), 29 percent considered this a state responsibility, while 49 percent considered it a local responsibility (19 and 72 percent respectively, in the case of Detroit). This suggests that urban quality is considered important to the quality of life in Michigan, but that people feel that Detroit's urban problems do not necessarily affect the quality of life in the state to the same degree and that Detroit should be held responsible for addressing its own problems.

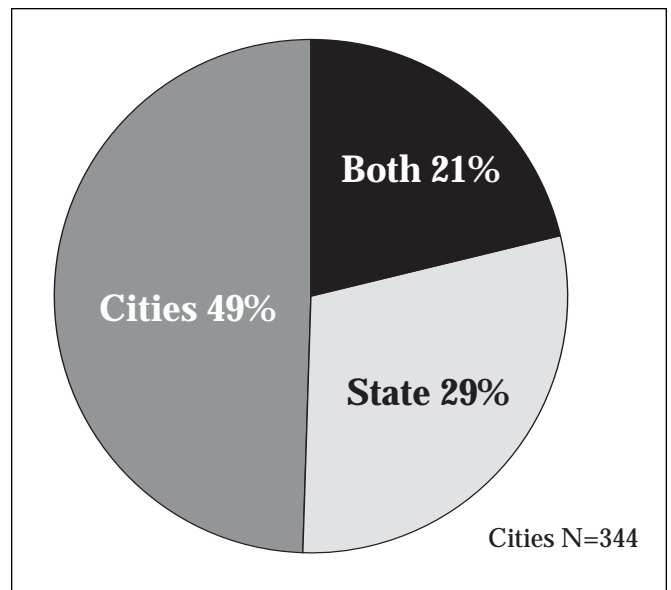


Fig. 11. Perceived responsibility to address “Michigan city problems” by state, local or joint initiatives (MSU IPPSR, 2001).

When respondents were asked whether they were “not at all concerned,” “somewhat concerned” or “very concerned” about urban sprawl issues, respondents expressed greatest concern about increases in pollution and energy consumption (56 percent), followed by the loss of farmland and open space (55 percent), infrastructure cost (47 percent), poverty concentration (45 percent), traffic congestion and less investment in the central city (34 percent each). The relative level of concerns is expressed in Fig. 12.

When asked which level of government should take the main responsibility for reducing the negative effects of sprawl, the most frequent response (Fig. 13) was “state” (42 percent), followed by “local” (24 percent) and “county” (17 percent). This suggests a policy mandate for the state to take the lead and work with local and county governments to address this issue.

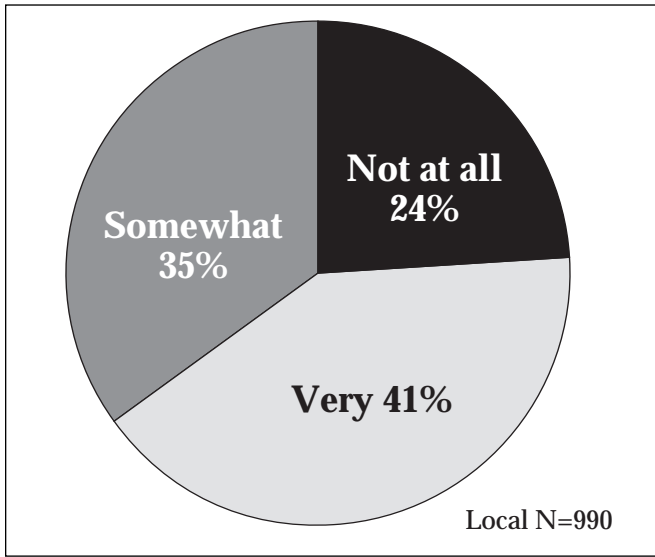


Fig. 12. Relative citizen concerns about urban sprawl in their county, region or the state (MSU IPPSR, 2001).

- Low-interest government loans to businesses 47 percent
- Low-interest government loans to families 59 percent
- State purchases from businesses 23 percent
- Redevelop infrastructure 47 percent
- Free/low-cost job training to residents 43 percent
- Free/low-cost job training to businesses 39 percent

Respondents indicated that the state (51 percent) and federal (35 percent) governments do the best job of protecting the environment. However, residents reported that both are doing “too little.” Only 38 percent thought that the state was doing enough, and only 32 percent were content with the level of federal activity (Fig. 15).

Relative preferences of the general, functional responsibility of state or local governments to address issues of sprawl were also identified (Fig. 14).

Some planning practitioners believe that the state's population is increasingly frustrated with sprawl and is convinced that revitalization of inner cities would help to address this issue. They believe that citizens understand that inner-city rejuvenation would help redirect new development away from suburban and rural open space toward the inner cities, thereby reducing sprawl. To test this notion, citizens were asked, “Do you think that redeveloping deteriorated or underutilized areas in old inner or central cities would reduce urban sprawl?” Some 19 percent of respondents said that it would “greatly reduce” urban sprawl, 65 percent felt it would “somewhat reduce” it, and 16 percent said “it would not help at all.”

Respondents reported a surprisingly high willingness to assist deteriorated or underused areas of central cities even at the expense of other current or potential state programs and projects. Some 85 to 93 percent of respondents “strongly favored” or “somewhat favored” each of the following options:

- Tax breaks to businesses 38 percent
- Tax breaks to families 58 percent

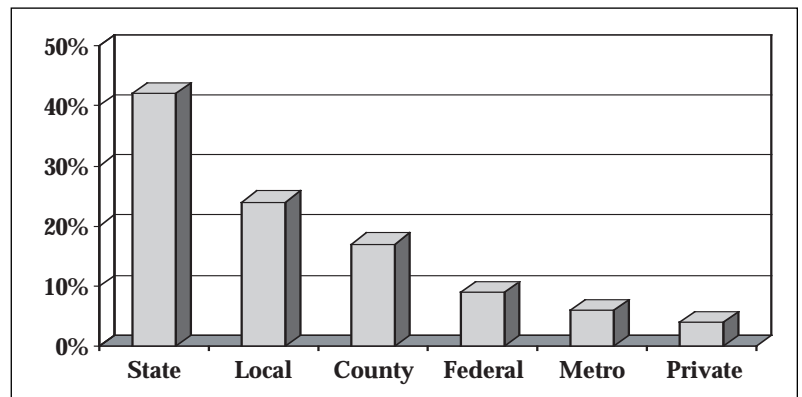


Fig. 13. Citizen-identified relative responsibility for government levels to address urban sprawl (MSU IPPSR, 2001).

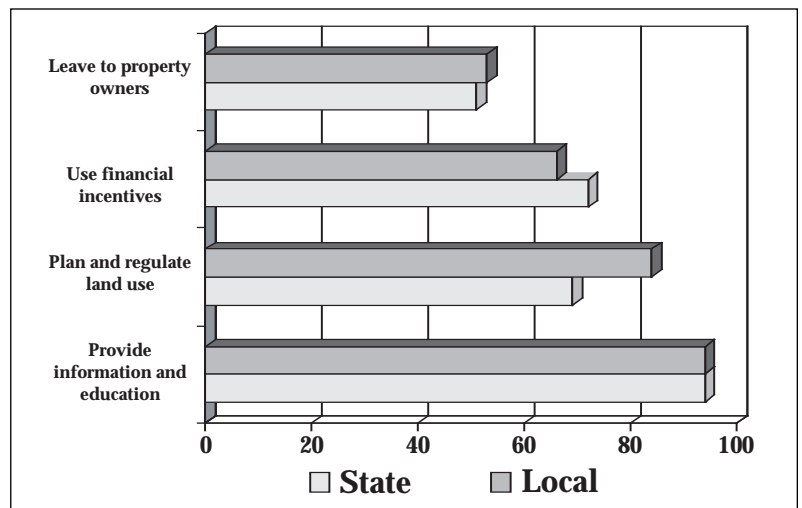


Fig. 14. General responsibility of the state or local governments to address issues of sprawl (MSU IPPSR, 2001).

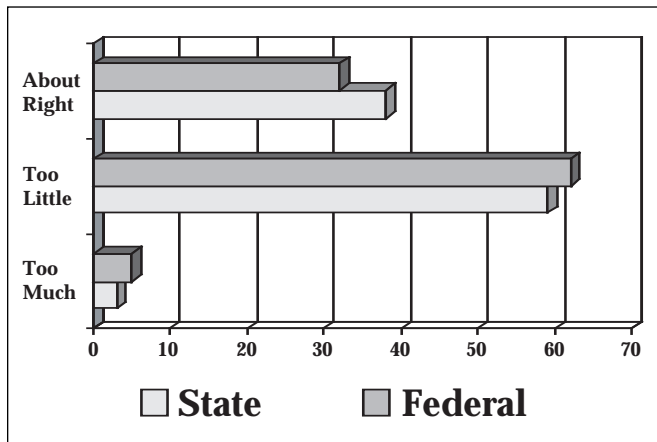


Fig. 15. Level of government effort to protect the environment (MSU IPPSR, 2001).

In 1998, Michigan voters approved a bond issue that included \$350 million to clean contaminated sites (most of these are brownfield sites in or near urban centers). When respondents were asked how they thought the funding should be allocated, they said that “contamination levels” (69 percent) were more important than “redevelopment potential” (25 percent).

Some 85 percent of Michigan residents said that polluted sites should be cleaned up to the same standards regardless of their intended future use. The following groups were the most often cited for payment responsibility:

- Corporations/individuals who caused contamination (87 percent).
- Above group even when the pollution was legal (84 percent).
- The government for a portion (87 percent).
- The government for entire cost if no other responsible party is found (89 percent).

The lack of integrated and coordinated land use planning as a critical concern is cited by numerous investigations and studies over the past five years. In 1992, Michigan Gov. John Engler's Relative Risk Analysis Project identified lack of land use planning as one of the highest risks to human health and the environment. In 1995, the Michigan Society of Planning Officials' Michigan Trend Future Report very clearly documented the adverse impacts of incremental, uncoordinated land use decisions being made by some 1,800 local units of government. In particular, it stated the effects of urban sprawl as

widespread, extensive conversion of agricultural lands, the loss of access to timber and minerals, the loss of unique ecosystems and biological diversity, massive transportation and infrastructure costs, and expanding problems with non-point source pollution.

As a consequence, both public organizations and advocacy groups have reacted to this need for better coordination in land development. Regional entities such as the West Michigan Sustainable Business Forum, New Designs for Growth in the Grand Traverse Region and Wayne County's Roundtable for Sustainable Development; and statewide organizations such as the Michigan Economic and Environmental Roundtable are beginning to address these concerns. However, not since the 1960s and '70s has there been an organization strongly advocating integrated and coordinated land use planning on a statewide basis and effective public policies that support statewide planning. In fact, many practitioners agree that Michigan lags behind most other large states in developing a statewide growth management strategy¹⁴.

3.4 Growth Management Initiatives

Michigan's Land Information Access Association (LIAA) conducted a survey of statewide growth management organizations found in various parts of the country (Vandermeulen et al., 1997). Most were created as completely new organizations for the purpose of land use policy reform or implementation; some were direct spinoffs or projects of existing organizations, and others represented existing organizations that added growth management as an organizational goal. Many of these entities focused almost exclusively on changing or defending state-level policies, providing little local assistance or advocacy. Others addressed local land use decision processes.

The relative success of these organizational efforts is strongly reflective of the bottom-up, participatory planning process in the United States with perceived impacts on:

- Growth issues and proper planning.
- Establishing long-term membership and citizen support.
- Public education.

- Coalition building with farmers' and hunters' organizations or other environmentally conscious citizen groups.

In addition, the LIAA conducted a survey of citizens and officials involved in Michigan land use planning and development issues. This survey involved more than 300 prominent state leaders and organizational activists and a random selection of more than 700 people from the Michigan Society of Planning Officials (an umbrella organization of about 4,000 public officials and citizens engaged in planning and zoning). Respondents identified the need to change both state laws and public opinion to achieve better land use planning and management. The LIAA summarized responses into three categories:

- Technical assistance, training and education - Survey results emphasize the need for better methods and means for managing land use change, including more comprehensive mapping and additional training and education for government officials and citizen planners.
- Public and landowner education — Survey respondents call for greater public awareness of the present and long-term impacts of land use change as well as a more abiding sense of land stewardship.
- Changes in state laws and policies — This category includes legal assistance and legislative lobbying efforts to bring about improvements to existing laws and the development of new laws.

The LIAA concludes that:

“... We believe either a new organization or a new coalition of organizations is needed to expand public education efforts, provide technical assistance, and lead a drive for changes in state laws and policies”

“... There is a real and substantial need for changes in and additions to existing state legislation to help contain sprawl and greenfield development, preserve farmland and open space, encourage urban revitalization, and develop new paths to coordinated local and regional planning....”

The LIAA study concludes that the challenge of bringing about changes in the state's land use laws and policies presents a different kind of organizational need. The study was unable to identify organizations in Michigan with the sole purpose of bringing about changes in state land use laws and policies for growth management. That is, there is a clear gap in the efforts now being undertaken and the needs articulated by

the citizens and public officials surveyed. Therefore, a major new advocacy effort may be needed to induce these changes. The majority of people responding to the survey have called for the formation of a new growth management organization with the central defining task of revising state laws and policies.

The Michigan Society of Planning Officials (now known as the Michigan Society of Planning [MSP]) has begun to assume the role of informing land use policy that the LIAA maintains is lacking among advocacy groups. Working with the state representative and others, MSP, with help from the Planning and Zoning Center in Lansing, proposed legislation to overhaul the planning enabling acts. Among the provisions of the omnibus Comprehensive Planning Act is a requirement that all jurisdictions considering a master plan — whether revision of a current plan or an entirely new plan — inform and solicit input from all neighboring communities. Although this act was not passed, amendments to the existing planning enabling acts require notification to plan and updates of all master plans every five years.

Further, in 2003, Gov. Granholm established the Land Use Leadership Council, which brought together leaders and stakeholders from around the state to address issues of urban revitalization, land resource-based industries, planning and development regulation, and infrastructure and community services. In its report, *Michigan's Land, Michigan's Future*, the council made more than 160 recommendations strongly based on “smart growth” tenets. The council's vision regarding growth management is to “... provide new tools, alternative planning approaches, offer technical assistance, and resources for local government to reduce sprawl and encourage intergovernmental and interagency cooperation ... for large geographic areas.”

3.5 Constraints on Planning in Michigan

Constitutional safeguards declare that neither federal nor state governments may deprive a person of property unless generally recognized legal procedures are followed, the public interest is served and just compensation is provided. The courts invented the doctrine of a superior police power that reserved the right of any state to protect the health, safety and welfare of the public and gave immunity from paying compensation for losses that might be involved. Land

use regulations were considered to be an exercise of these police powers. More recent court decisions have reversed this stance. The court has defined more precisely the limits to “taking” without compensation. A regulation that restricts the use of property must have a “rational nexus” with a public purpose, and conditions that are imposed must bear a “rough proportionality” to this purpose. Thus, uncertainty continues to exist over the extent to which controls may be imposed without the payment of compensation.

The legal interpretation based on case law on public vs. private property rights is significantly different and more narrowly defined in the United States than in other industrialized democracies. In the latter, public intervention controlling the type and magnitude of development and the associated impacts on neighboring properties or community interests is much more widely accepted. More precisely, here private development rights are derived from public land use plans depicting growth scenarios and service boundaries, rather than private development that directs urban growth into open space, as is the reality in most U.S. states.

In the past decade, public concern over Michigan's land use challenges has increased dramatically. Studies initiated by Gov. Engler, the Department of Agriculture, the Michigan Society of Planning Officials and several non-profit organizations have documented extensive loss of farmland and open spaces to suburban sprawl while older urban core communities continue to lose population. Sands (2003)¹⁵ reports in *Michigan at the Millennium* that, according to a 2000 study conducted by the Sierra Club, Michigan is tied for last among the 50 states in quality of land use planning and growth management.

These studies project continuing significant losses of valuable lands and extensive public costs, not only to the primary beneficiaries but to taxpayers if substantial changes are not made in state and local government policies and land use practices. Citizens and communities already feel the effect of inefficient land use patterns in many ways: community land use conflicts, traffic jams, increased noise and pollution; rising taxpayer costs for water, sewers and highways; declining public facilities and job opportunities in older cities; and loss of the aesthetic values supplied by farmland, wetlands and open spaces.

Despite mounting evidence of the need for change, statewide leadership has yet to coalesce around the issue. Many commendable efforts have been made to build a multi-interest coalition to promote land policy reform, ranging from legislative forums to popular conferences. However, none of these efforts has yielded a cohesive group able to articulate and press for adoption of such reform. Nor has state government provided effective leadership or support to local government through enabling legislation, funding or information tools.

The state government has hitherto shied away from adopting statewide growth management policy initiatives. Michigan has a strong tradition as a “home rule” state, with a strong preference for local decision making. The attitudes of previous state governments, regardless of their political allegiances, have shown strong deference to home rule and the rights of individual property owners.

3.5.1 Outdated Institutional Structure

The institutional structure of local government in Michigan was established during the pioneer years of early settlement and development (VerBurg, 2002). Incremental changes to the basic framework during the course of this century have been very limited.

3.5.2 Effectiveness of Local Government in Guiding Urban Development

Virtually all land use decisions in Michigan are made at the local level — by cities, villages and townships. One of the major constraints of current land use planning practice as a framework for urban growth management is lack of integrated spatial planning. Each level of local government units — cities, villages and charter townships — received its own enabling mandates from the state to plan and zone within its jurisdiction. The planning and zoning statutes were based on model acts prepared by the U.S. Department of Commerce many years ago, and very limited legislative change to the basic provisions has occurred since then.

Separate acts established enabling guidelines for each class of local authority:

- Township Planning Act (P.A. 168 of 1959), as amended by H.B. 5038, P.A. 263 of 2001 (M.C.L. 125.321 et seq.).

- Township Zoning Act (P.A. 184 of 1943), as amended by H.B. 4995, P.A. 177 of 2001 (M.C.L. 125.271 et seq.).
- Municipal (city, village and some pre-1959 township planning) Planning Act (P.A. 285 of 1931; M.C.L. 125.31 et seq.), as amended by H.B. 5267, P.A. 264 of 2001.
- City and Village Zoning Act (P.A. 207 of 1921), as amended by H.B. 5029, P.A. 179 of 2001 (M.C.L. 125.581 et seq.).
- County Planning Act (P.A. 282 of 1945; M.C.L. 125.101 et seq.), as amended by H.B. 5252, P.A. 265 of 2001.
- County Zoning Act (P.A. 183 of 1943), as amended by H.B. 5028, P.A. 178 of 2001 (M.C.L. 125.201 et seq.).

Each unit of local government develops its own plan in isolation from other communities. Because there has been little if any cooperation or coordination, one unit's decision can have a negative impact on an adjacent community and may lead to conflict.

The planning acts enable local units of government to prepare comprehensive plans, but this is not mandatory. On the other hand, the 2001 Coordination Planning Act Amendments (Public Acts 263, 264 and 265 of 2001), which went into effect on January 9, 2002, require that all existing plans be reviewed every five years and that jurisdictions communicate these plans with their neighbors. The zoning enabling acts were also amended in 2001 to provide landowners the option of cluster development to allow the same number of dwellings on less than 50 percent (townships and counties) or 80 percent (cities and villages) of the land that could otherwise be developed under existing ordinances in some residentially zoned areas. This legislation is a step in the right direction, but the fragmentation of planning and zoning remains highly cumbersome, to say the least. Zoning codes do not necessarily have to be based on comprehensive plans.

In Michigan, a municipality cannot exclude a lawful land use from its community unless it can be demonstrated there is no need for the use in the region or no appropriate location within the community exists. Thus, in principle, even a rural community must be willing to accept a shopping center, mobile home park or any other legitimate land use. Even though a similar use exists in the adjacent community, under existing Michigan law, denial of the development would be

considered exclusionary zoning (Americana Foundation, 1992). In practice, a well-articulated master plan must be substantiated by the appropriate ordinances (zoning, wetland, etc.) to provide a measure of legal protection and local control. In urban fringe townships, subject to multiple development pressures, enforcement is based not only on the appropriate ordinances but also on the determination by local planning commissions, zoning boards and elected officials to implement land use plans and regulations. Typically, this process faces frequent legal challenges by developers within the region seeking random zoning changes that permit higher density developments, even when the land was purchased with specific restrictions in place.

Michigan is not empowered to employ the full range of urban growth management techniques that have been used in other states in conjunction with more traditional planning and zoning tools. For example, Michigan communities may have difficulty taking advantage of the concurrency technique without express legislation that enables them to tie development approval to adequate public facilities (Planning and Zoning Center, Inc., and Land Information Access Association, 1999). Local concurrency regulations may work best if linked to a capital improvement program. Likewise, at the present time, no express statutory authority exists for Michigan municipalities to enter into development agreements, even though many have done so for a number of years. Enabling legislation would ensure uniform requirements and consistent application.

The state will not compel local bodies to exercise their planning mandate if they choose not to do so. State government agencies are not authorized to regulate land use if local government does not do so. However, in recent decades, township planning and development programs have been greatly influenced by federal and state governments as a result of revenue sharing, grants-in-aid and technical assistance programs.

There is evidence, however, that such programs tend to favor faster growing suburban communities, rather than serving to compensate central cities experiencing slower growth in fiscal capacity (Chernick, 2001, as cited by Taylor and Weissert, 2002). According to Taylor and Weissert, changes made in 1998 in the formula calculating revenue sharing in Michigan confirmed this pattern. Their analysis showed that the

fastest growing suburban communities received disproportionate compensation. In effect, it can be argued that the change in the formula further supports land use policies that encourage sprawl.

3.5.3 Lack of Proactive State Government Leadership

Successive state governments in Michigan have had a mixed record in promoting coordinated urban development. Three significant concerns stand out:

- Environmental management functions are poorly integrated across state agencies.
- Successive state administrations have shied away from delegating to local governments the mandate needed for effective environmental planning and management, including the role of urban growth management.
- State governments have also refrained from making major structural changes to the fragmented and overlapping structure of local government in Michigan.

Because of the lack of integration within Michigan state government, its role in environmental management has evolved in a relatively ad hoc manner, with various statutes and functions originating in inadequate response to issues such as water pollution and rapid decline of wetlands and unique terrestrial habitats.

Michigan state government was environmentally progressive during the 1970s. The Milliken administration, for instance, supported environmental legislation and initiated a number of innovative environmental programs. But during the 1980s and 1990s, in response to economic decline in the state as in other “rust belt” states with declining industries, state attitudes changed drastically. Policy initiatives of the 1970s have either been removed or are quietly ignored. The Engler administration strongly favored a market-driven voluntary approach to achieve good environmental outcomes rather than reliance on regulatory compliance, an approach that parallels the federal preferences of the Bush administration.

An example of recent state government ambivalence toward its environmental role is the Environmental Protection Act (EPA) 127 of 1971, which provides a framework for states' environment policy. It is akin to a state environmental bill of rights or charter. The act

imposes an affirmative obligation on all decision makers to consider the environmental consequences of their activities and policies. This act, drafted by Joseph Sachs at the University of Michigan, was based on the inspiration of Lynton K. Caldwell from Indiana University and Sen. Henry Jackson of Washington state, and influenced by the thinking behind the National Environmental Policy Act of 1970. Like the NEPA, Michigan's Environmental Protection Act was a policy statute. It established an individual's right to sue for pollution control even if not directly adversely affected by the action. Any person or organization could bring suit in circuit court “. . . for declaratory and equitable relief...for the protection of the air, water and other natural resources...from pollution, impairment or destruction” (MCLA 691.1202).

The EPA was incorporated within the Natural Resource and Environmental Protection Act (NREPA) 451 of 1994, supplementary to existing administrative and regulatory procedures provided by law. The NREPA consolidated several separate resource and environmental statutes, apparently to promote integrated environmental management under the purview of the Michigan Department of Natural Resources (MDNR). The EPA's status been dwarfed symbolically, if not legally. For instance, the official state government environmental discourse makes little or no reference to it. As mentioned earlier, on wetland protection, Michigan has assumed the federal regulatory roles with, according to many citizens, mixed success.

Recent changes to the environmental impact assessment (EIA) procedures also have further weakened the environmental management role of state government. The state EIA requirements were administered by the Michigan Environmental Review Board. The board was set up in 1972 by Gov. Milliken under an executive order, not by legislation. Any activity receiving state financing was subject to an environmental review. Projects that were large, socially controversial or located in ecologically sensitive areas were subject to in-depth reviews. The board also used to undertake reviews of the federal EIAs as well. The board was later abolished and replaced by the Science Advisory Board, which serves only as an advisory policy forum for state government. At present, state agencies require EIAs only for the more controversial state-funded projects.

The Michigan Department of Natural Resources was reorganized in 1973 to manage the state's natural resources and regulate environmental quality. The role of the MDNR in statewide land use planning was never clear, although in 1980, its Division of Land Resource Programs was reported to be developing a state land and water resource management plan, including a resource inventory, to protect sensitive areas, agricultural land and open space as well as to improve policies for utilization and environmental regulation of state-owned lands (Held and Visser, 1984). The department's Bureau of Environmental Protection was responsible for water and air quality regulation.

In 1991, Republican Gov. John Engler split the MDNR into two separate agencies. The Michigan Department of Environmental Quality (MDEQ) was created to manage air and water quality; the remainder of the MDNR continued to manage natural resources. Ironically, the protection of wetlands — a multifaceted resource — is administered by the MDEQ, primarily by a permit review process. This move has been debated for the past 13 years and has led to considerable criticism of the MDEQ by environmental groups. With the election of Democrat Jennifer Granholm in 2002 came speculation that the departments may be recombined in the future.

The environmental permitting system under the Natural Resource and Environmental Protection Act 451 of 1994, now administered by the two agencies, remains apparently fragmented. The act regulates environmental pollution, but many environmental impacts of unplanned urban growth are excluded from its purview.

State government decisions, including road construction, environmental regulations and tax breaks for businesses, have major impacts on urban development. Nevertheless, there is limited coordination between the activities of state agencies and local government. For example, the state does not have prescribed standards for local governments to meet in land use planning. During the 1980s, the Department of Natural Resources sought to carry out its land and water resource management functions in partnership with substate levels of government. For example, the County Rural Zoning Enabling Act authorizing the adoption of county zoning ordinances was amended to require approval by the Department of Natural Resources (Michigan Department of Natural Resources, 1980). This is no longer required.

3.5.4 Lack of County or Regional Initiatives

The federal government has encouraged regional planning initiatives to provide a stronger regional perspective in applications for federal grants relating to matters such as air and water pollution, traffic, solid waste disposal and affordable housing. The rationale for this regional perspective was that many environmental problems transcend political boundaries, and such problems could be solved only through regional cooperation. Michigan has 14 regional groups, of which the Southeast Michigan Council of Governments (SEMCOG), founded in 1968, is the largest and most active. With Detroit as its hub, it includes more than 130 governmental units.

According to VerBurg (1997), these planning and development regions have their roots in the late 1960s, when the nation was taken up with the idea of councils of governments (COGs) in an attempt to improve the level of cooperation among governments in metropolitan areas. About the same time, President Richard Nixon launched his program to decentralize the federal government by dividing the nation into several regions, each with its own headquarters and autonomy to administer federal programs within the region. Washington encouraged the states to create a system of regions within each state through which state programs could be administered. Gov. George Romney designated 13 regions in Michigan. Currently, 13 economic administration districts are identified as entities developing EDA-sponsored strategic economic development plans. Gov. William Milliken's plan was to organize state government activities around the regional alignment.

For a time, the Regional Planning Development Commissions were able to play important roles as federal and some state grants funded their activities. Over time, this system of multistate and substate regions began to dissipate, although remnants of the national system remain. The Michigan substate regional system also remains, although many of the regional planning agencies lack the vigor and funding they once had — changes in federal funding programs and the level of funding for planning activities led to a narrowing of their activities and staff cuts. Their present day functions are advisory — advising federal and state agencies on grant applications and governing boards about proposed actions. They are also beneficial in gathering data for member units.

Michigan's planning and development regions, some of which are organized as COGs, receive a modest state apportionment each year. Some of this funding is for economic development projects. Regional agencies also receive some funding from counties and from the federal government, the latter for project activities relating to transportation, criminal justice, etc.

The regional planning and development agencies operate under the authority of the Regional Planning Commission Act. The Regional Planning Commission Act enables any two or more local governments (including special-purpose districts) to create a regional planning commission. Such commissions may operate separately or as part of a regional council of governments. The commission may hire staff and develop plans, but plan implementation is left to individual local governmental units. These are voluntary associations rather than a higher unit of government and cannot compel members to conform to the plans and policies adopted by the organization. The success of such an organization depends on the ability and willingness of member governments to recognize the long-term advantages to be gained by cooperating with other units.

There is no provision for linking policies of state government agencies to the provisions of regional plans, either. However, Skole and others (2002) contend that regional planning, regional alliances, regional planning frameworks and metropolitan planning organizations are instrumental to controlling sprawl. The argument is that such programs and organizations are effective through shared financial resources to obtain sufficient information technologies and support local decision making. These programs can take advantage of innovative spatial decision support systems that can look at the region as a whole and make recommendations (as a neutral entity) for interjurisdictional cooperation.

The Southeast Michigan Council of Governments (SEMCOG) is coordinating the Rouge River National Wet Weather Demonstration Project funded through the USEPA. This is a regional, multi-jurisdictional program aimed at improving both surface and groundwater quality by eliminating non-point source pollution and combined sewer overflows. Other examples of growing regional cooperation through shared information technologies include the West Michigan Council of Governments' sponsorship of a regional geographic information system (REGIS) that

provides geospatial information and decision support capabilities to local units of government. A regional GIS cooperative is also being established among communities within the Northwest Michigan Council of Governments, and in Jackson County between county, city and township governments and the Region 2 Planning Commission.

Michigan counties may assume the authority to make land use decisions if local units choose not to. Counties may be asked by local units of government that do have the authority (townships, villages and cities) to provide services and expertise that can assist in the decision-making process. According to VerBurg (1997), counties used to play a more significant role in planning, but now their role is rather ambivalent. From the 1950s through the mid-1970s, community planning was a popular governmental activity. One reason was that the federal government had established a grant program to encourage communities to create long-term physical development plans. Michigan's population was growing rapidly, and urban development was brisk. In addition, the federal government was very active in supporting the extension of new expressways, water and sewer lines, and other elements of infrastructure. Similarly, multicounty Economic Development Administration (EDA) regions receive federal funding to develop economic growth strategies in the form of overall economic development plans. In practice, however, these plans focus more on local infrastructure improvements, such as the expansion of water treatment facilities or industrial parks, rather than addressing long-term growth strategies.

County governments became involved in facilitating much of this development. Many established planning commissions and employed staff. Many counties collaborated in multicounty or regional planning commissions that received a great deal of state and federal support during the 1970s. When the pace of development slowed to a near halt in the early 1980s, the role of planning at the county and regional levels became less clear. As state and federal support waned, so did the influence of county regional planning arrangements.

Movements in Michigan at the legislative level and at the local level may signal a change in this trend. The 2001 Coordination Planning Act Amendments (Public Acts 263, 264 and 265 of 2001) require that municipalities notify neighboring jurisdictions of their intent

to develop or update a master plan. They are then required to submit the plan to all neighboring jurisdictions and provide opportunities for comment. This process provides opportunities for intergovernmental cooperation.

One example of this is in Jackson County, where the first multijurisdictional, countywide land use planning program in Michigan is underway. All local units of government in the county—five villages, 19 townships and the city of Jackson—have agreed to collaborate with county government in the development of a comprehensive countywide master plan. This plan will provide an overall framework that coordinates future local planning efforts throughout the entire county. The Jackson County Comprehensive Land Use Plan will be the first plan that includes an interactive decision support system to assist its implementation. This interactive component substantially expands the benefits of a traditional master planning approach. Wise community economic development, enhanced quality of life, reduced public costs for infrastructure expansion and conservation of valuable natural resources are the expected results from decision making based on real-time data and information.

4. Balancing Land Supply and Demand

4.1 Introduction

Sprawl results from several sets of factors. Perhaps the most important is the *decentralization* of employment resulting from dual-income families, dispersion of residential areas and expansion of job opportunities in the service sector. This is made attractive as a result of lower land prices and development costs on the periphery, lower transportation costs made possible by extensive highway systems, and the proximity of a good labor supply that moved first to suburbia for more space, privacy and amenities. Government subsidies (including tax abatements to major corporations) in metropolitan areas and technological changes continued to facilitate employment decentralization, leading to an unbridled expansion. Interjurisdictional competition for economic development investments (even among states) has resulted in major tax concessions and subsidies in infrastructural development.

Low-density suburban patterns also reflect a long tradition of *exclusionary, middle-class residential values* best accommodated by suburban living. A great majority of Americans say they would prefer to live in low-density, single-family housing and easily accept commuting times of 30 minutes or more. The preference is for a (semi)rural lifestyle with access to (sub)urban amenities such as quality schools and medical and retail facilities. Typical urban amenities such as access to drinking water and sewage treatment facilities are replaced by the private well and on-site septic disposal system. Reliance on urban facilities is further reduced by audiovisual satellite communication links and online employment, shopping and banking.

A third set of factors is the *conditions of the central city*. Many middle-class households are motivated to move to suburbia by the increasing crime and unemployment rates, the ethnic and racial diversity of urban neighborhoods, the lower rate of home ownership and associated maintenance problems, the poor quality of the public schools, and the decaying physical and service infrastructure. For instance, 1991 crime rates in the city of Baltimore and the surrounding metropolitan area were 11,371 and 6,650 (per 100,000 persons), respectively. Crime rates in both jurisdictions have risen since 1985, but the crime rate has grown much faster in the city than in the county (+32.6 percent in the city vs. +13.4 percent in the county) (U.S. Census, 1988 and 1994).

This process of urban decay is not easily reversed. In most cases, older metropolitan areas, particularly their central cities and older suburbs, are at a disadvantage in competing for investment opportunities compared with previously undeveloped areas because of the higher costs of land, site preparation and cleanup, and development approvals.

The final set of factors contributing to urban sprawl is *government policies* resulting in actions (subsidies such as tax rebates and other incentives) and non-actions (in dealing with environmental consequences). It is widely acknowledged that many policies—including tax policies, depreciation allowances, building regulations and implicit subsidies—subsidize greenfield development and discourage efforts to reuse older urban and suburban land and its overcapacity in infrastructure (e.g., electrical utilities).

To understand or characterize the process of urban sprawl, one can differentiate between the causal factors of sprawl and divide them into two broad categories: the *urban/push factors* — the principal reasons people are *motivated to leave* urban areas; and the *rural/pull factors* — the principal reasons people are *attracted to* rural areas. Some of these suggested factors, associated indicators and trends are listed below (Table 5).

These factors reflect, in part, focus group discussions with rural residents in Michigan, articles in the popular press and research conducted in developing countries (e.g., Winoto and Schultink, 1996).

In the United States, it is obvious that lack of urban and regional planning, as well as lack of intergovernmental collaboration and the decline in reinvestment and renewal of the key functions of the

Table 5. Examples of Causal Factors and Related Measures of Urban to Rural Migration.

Factors	Principal indicators	Identifiable variables
Urban/push factors	<ol style="list-style-type: none"> 1. Crime trend 2. Education (k-12) 3. Recreation 4. Transportation 5. Air quality 6. Land prices 7. Housing cost/quality 8. Industrial contamination 9. Retailing 10. Infrastructure 11. Sanitation 12. Racial and socioeconomic intolerance 	<ul style="list-style-type: none"> • Rate overall, type and distribution • Quality, access, graduation rate • Type, green space, facilities, quality • Traffic density, travel time, mode, access • Standard measures, respiratory problems • Commercial land use, rental rates • Access, quality and cost • Brownfields, toxicity, health risk factors • Diversity, availability and access • Physical/service, access, quality, cost • Quality and cost • Demographic ratios by race, economic and social class
Rural/pull factors	<ol style="list-style-type: none"> 1. Cost of land 2. Employment opportunities 3. Education 4. Recreation 5. Water quality 6. Air quality 7. Safety (police and fire) 8. Open space 9. Demographic homogeneity 	<ul style="list-style-type: none"> • Cost/acre and variability • Retail and service sectors, local and regional availability • Quality, graduation rate/postsecondary • Variety, quality, access • Standard measures, surface quality • Standard measures • Type, frequency, distribution • Woodland, wetland and agric. acreage • Demographic ratios by race, economic and social class
Demographic	<ol style="list-style-type: none"> 1. Pop. growth/trends 2. Pop. density 3. Migration and settlement patterns 4. Socioeconomic characteristics 	<ul style="list-style-type: none"> • Jurisdiction and other census tract data • Jurisdiction and other census tract data • Jurisdiction and other census tract data, including trends and predictive models • Income, employment and discretionary spending
Urbanization process	<ol style="list-style-type: none"> 1. Built-up area / trends 2. Building height 3. Pop. density 	<ul style="list-style-type: none"> • Footprint and permits, total valuation • Assessed values — local tax base • Census tract

central city (lack of diverse housing, effective public transportation, educational and recreational opportunities), financed largely by local taxes, have contributed to this urban exodus. Frequently, competition among adjacent units of local government and states extends beyond efforts to develop land and increase local property values, raising local tax revenues. It increasingly includes efforts by the rapidly developing jurisdictions to annex land from their less-developed neighbors.

The flight to suburbia that accelerated primarily in the 1950s was also facilitated by the construction of large retailing centers (in pursuit of a mobile clientele) outside the city perimeter, new schools and other new service facilities provided by surrounding townships

and made possible with funding from a dramatically increased tax base generated by higher property values. This process progressively undermined the revenues of the retailing and entertainment functions of the central city and its comparatively stagnant tax base, resulting in declining resources for public transportation and the general maintenance and upgrade of infrastructure. Given the fact that more affluent citizens were the first to migrate, this process set into motion a functional decay of housing quality and basic services, including educational and recreational functions, a further decline of tax revenues, employment and income opportunities, and frequently an increase in the crime rate (Fig. 16). This process eventually led to a decrease in the quality of life for city residents.

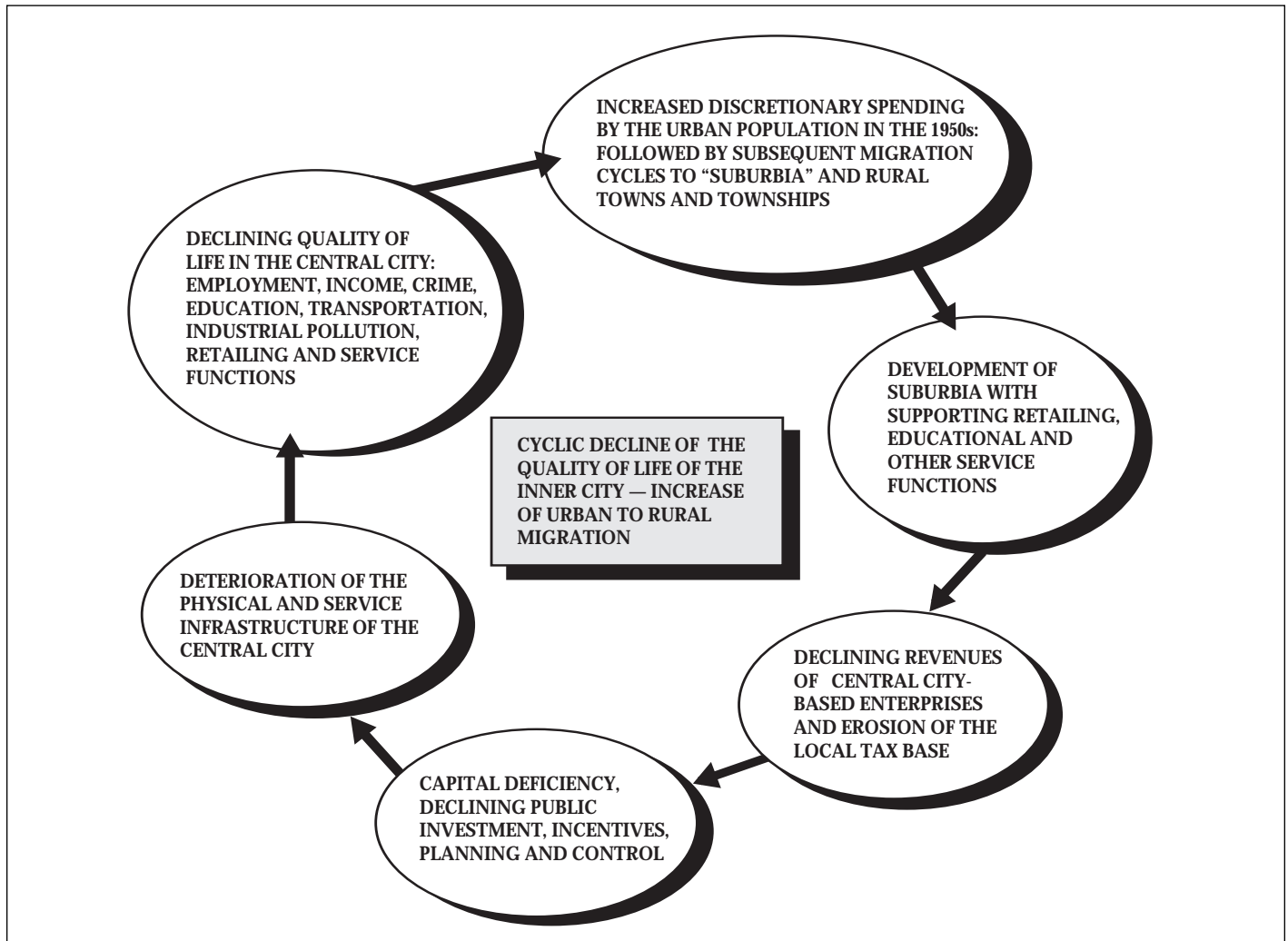


Fig. 16. The cyclic process of urban to rural migration (suburbs, rural townships and small towns surrounding metropolitan areas) without regional planning and cooperation, effective growth management or land use controls.

4.2 Need for Strategic Planning and Governance

To reverse this process and to recreate a livable, vibrant and economically viable central city requires regional strategies supported by local jurisdictions and encouraged by effective state and federal-based policy initiatives. Fundamentally, the need exists to address the causal factors that act as drivers of urban-rural migration and systematically provide both regulatory controls and incentives.

A growth BALANCE approach (Fig. 17) is suggested to effectively limit the SUPPLY of rural open space available for urban expansion while at the same time reducing DEMAND. The principal argument here is to promote the basic tenet of environmental stewardship and sustain the long-term productive capacity of land, providing both economic and environmental services. Effective DEMAND for rural open space could be reduced by reinvesting in the central city and its adjacent urbanized areas, (re)developing vacant and underutilized properties, restoring varied housing opportunities, education, retailing and entertainment functions. This can stabilize rural land prices and reduce the taxation burden on rural residents.

Balancing Land Supply and Demand

REDUCING DEMAND

THROUGH URBAN REVITALIZATION AND REDEVELOPMENT

- Brownfield development
- Service industry
- Employment
- Housing
- Transportation
- Historic preservation
- CBD revitalization
- Retailing
- Infrastructure
- Education
- Enterprise zones
- Public services
- Entertainment
- Green space
- Recreation
- Tax rebates



STABILIZATION OF LAND PRICES

LIMITING SUPPLY

OF RURAL LAND AVAILABLE FOR NEAR-TERM CONVERSION

- Master plan
- Zoning ordinance
- Incentive zoning
- Variances (limit)
- PUDs
- Wetland ordinance
- Woodland ordinance
- Land tax rebates
- Tax valuations
- PDRs
- TDRs
- Growth boundaries
- Service limitations
- Agri. compensation
- Intergovernmental growth alliances
- Concurrency

Fig. 17. Effects and controls of urban and rural land as a sustainable growth management strategy seeking to revitalize urban areas and limit the demand and need for near-term rural land conversion.

These maps depict possible urbanization in 2020 and 2040 if land-use trends since 1980 continue.

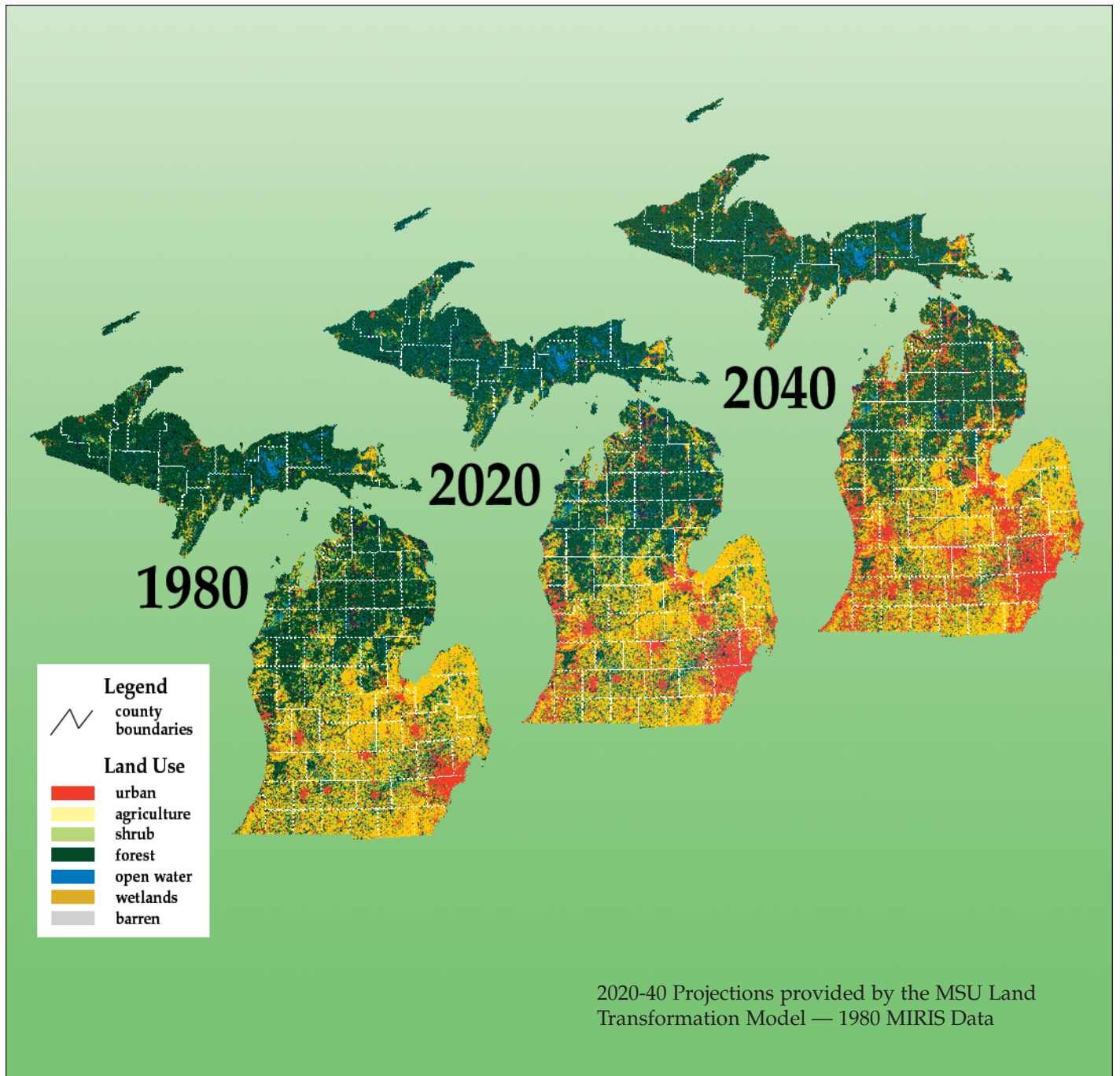


Fig. 3. Land use projection for 2020 and 2040 using the MSU land transformation model.

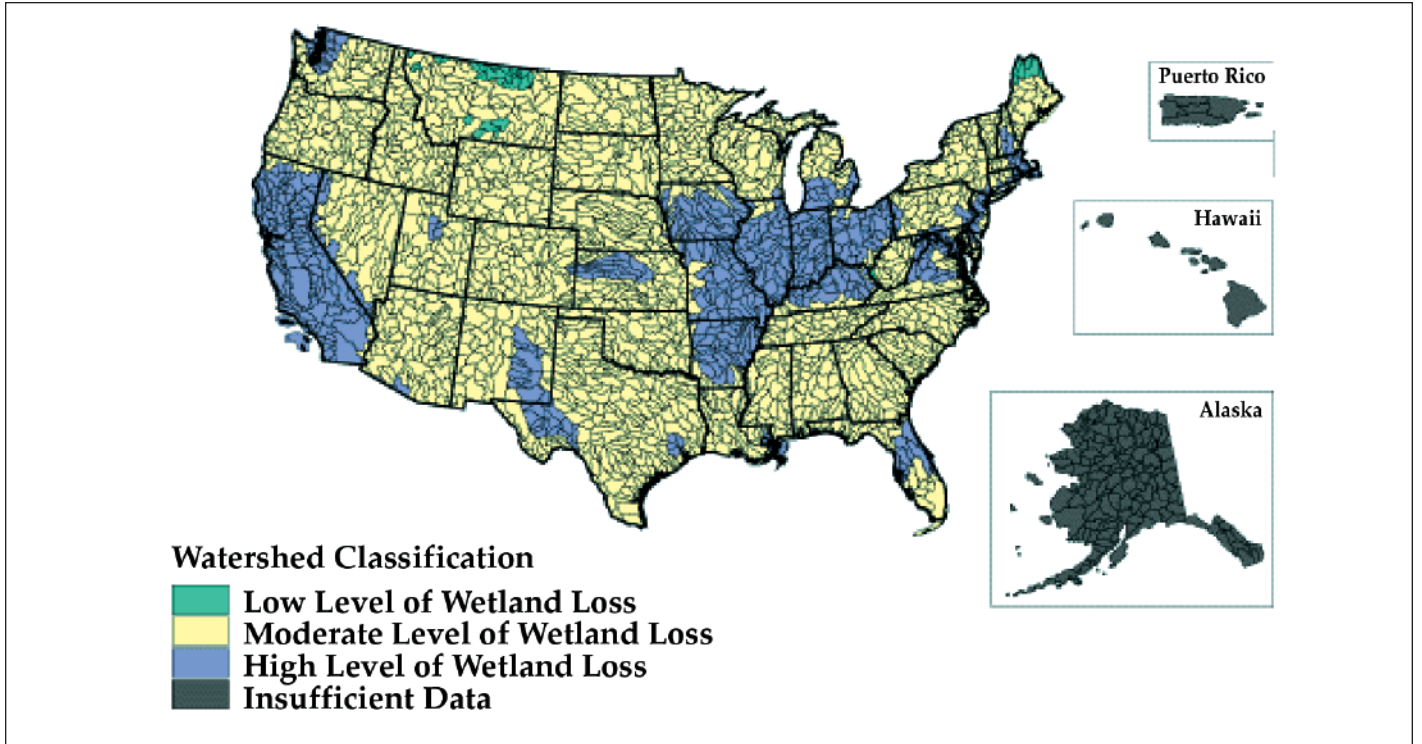


Fig. 5. Categorization and distribution of U.S. wetland loss (EPA)

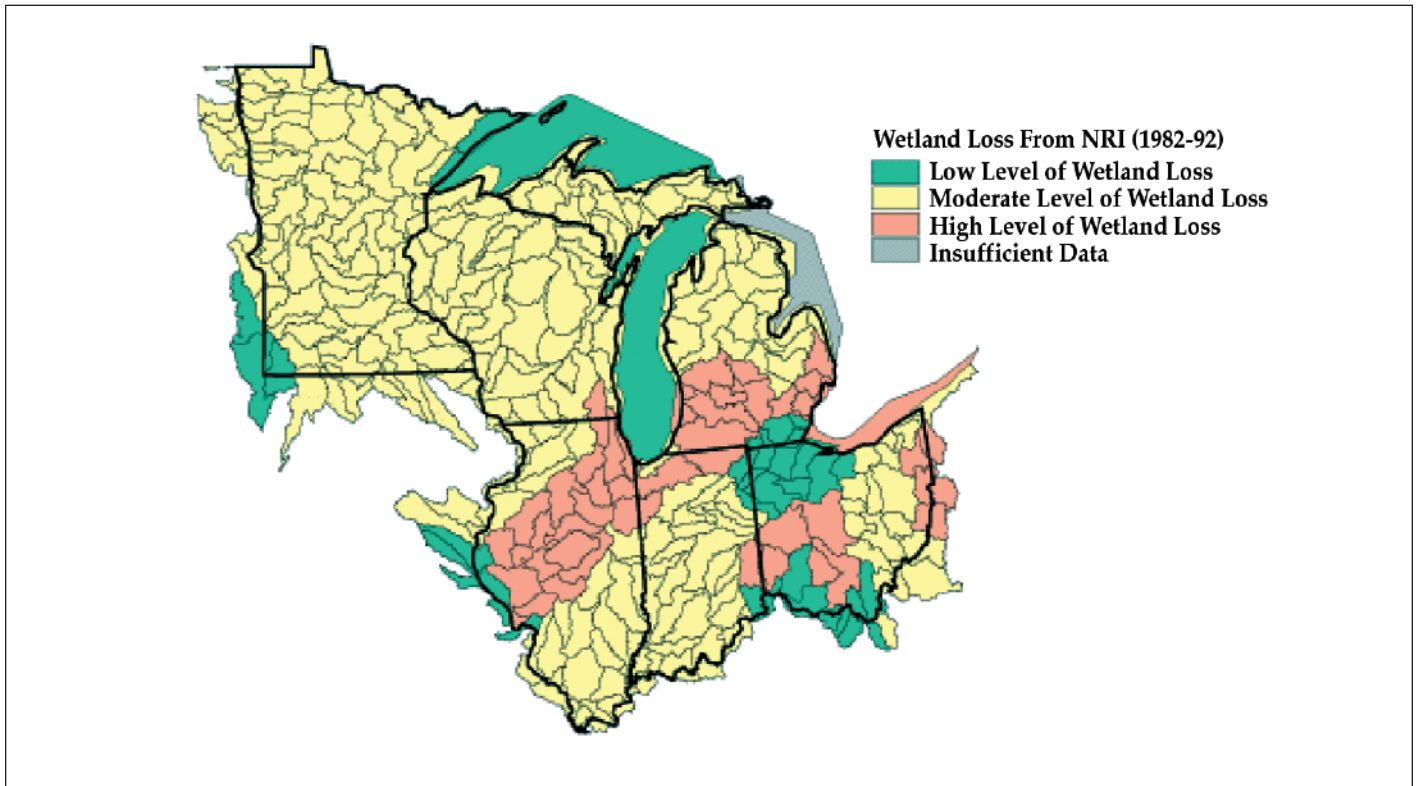


Fig. 6. Categorization and distribution of wetland loss in EPA Great Lakes region (EPA).



Fig. 24. Urban areas of New Zealand. The north-south distance is about 1,600 kilometers or 1,000 miles (Government of New Zealand).

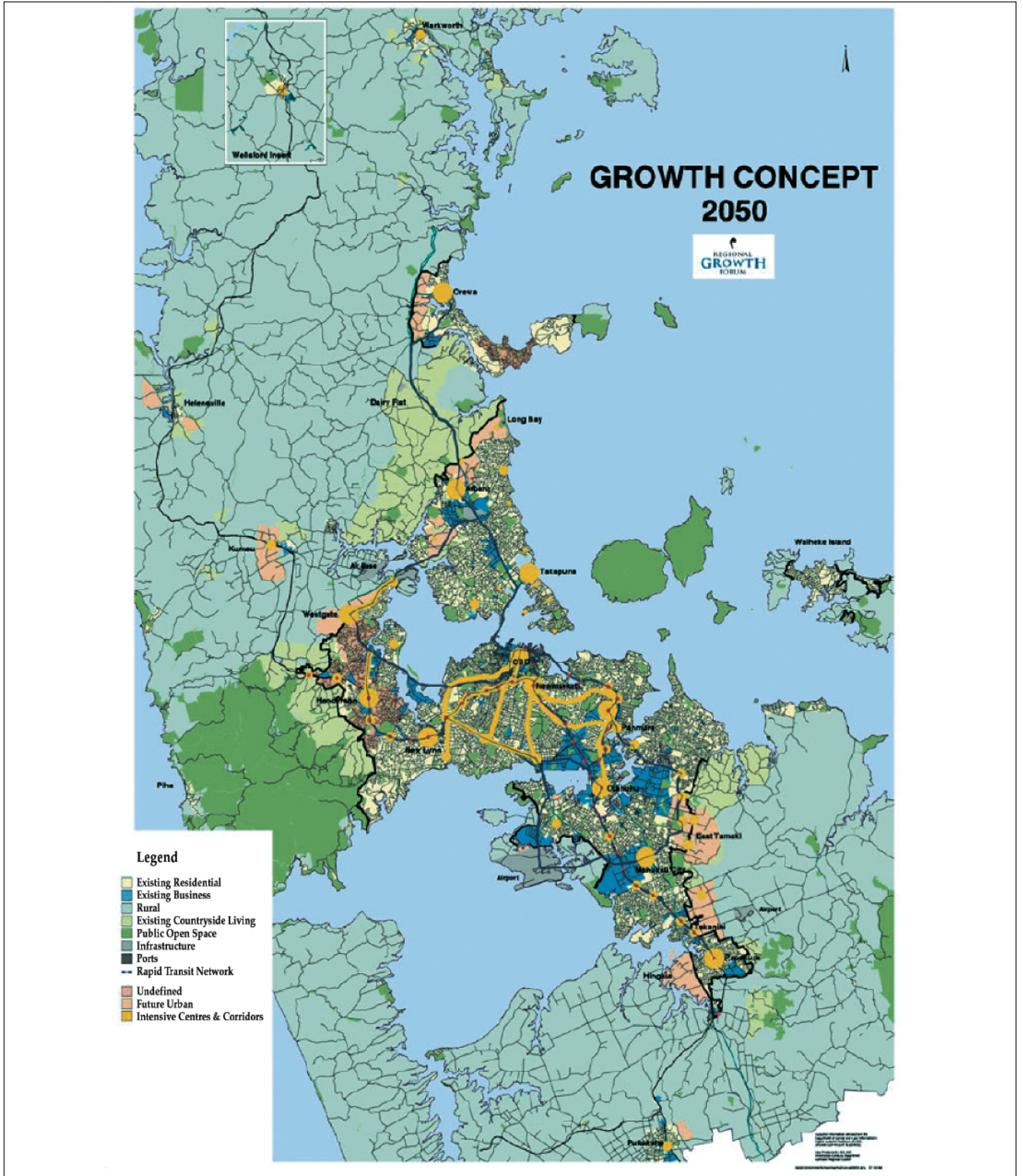


Fig. 26. The growth concept: 2050 (Source ARGF. 1999).

Policies to reduce urban expansion demand are largely designed to reinvigorate the functionality of the central city, its employment and income potentials while enhancing the overall quality of urban life. Specific measures to reduce the supply of land available for development in rural areas include the acquisition and transfer of development rights (PDRs and TDRs); more comprehensive, detailed and long-term development plans; effective legal and economic tools to preserve open space via ordinances and other means, and more concentrated and innovative housing development (e.g., planned unit development or PUDs; also referred to as planned residential development or PRDs in some municipalities) that seeks to integrate ecosystem and open space recreational functions with residential functions. The combined effect may be the restoration of urban land prices in revitalized areas and a moderation in the increase of rural land prices, which in turn stimulate development.

Other means to moderate rural development are provided by state and federal programs that provide tax rebates for land excluded from development (e.g., Michigan Public Act 116), subsidies to preserve wetlands (e.g., “swamp buster” regulations in the United States) and unique land management agreements restricting management practices detrimental to the environment (commonly arranged in parts of Europe). Together, tax rebates and compensation payments will provide additional revenue to farmers and reduce the need to pursue land sales to developers. Another policy that indirectly reduces effective land supply is a reduction of the assessed value of land used for agriculture. It reduces the local tax burden on farmers and assists in making agriculture an economically viable enterprise. Notably, all these measures are limited in scope and duration, emphasizing the need for proactive land use plans that are based on land use capacity and suitability considerations, well-defined in ordinances and systematically enforced.

Of special interest lately are the development of interjurisdictional strategies and alliances that direct and regulate growth, specifically between cities and surrounding townships via tax-sharing agreements. In addition, the principle of concurrency could be applied, meaning that the principal beneficiaries of development should shoulder the expenses associated with infrastructural improvement, such as road and sewer extensions or utilities expansion.

5. Regulatory Approaches to Land Use Planning

5.1 Constraints on Regulation

Across the world, disparate policies and laws have affected how rural land may be used or preserved for agriculture, forestry and nature. In the United States, the federal government delegates many powers and responsibilities to individual states. In certain areas of public policy, state governments have a high degree of autonomy, as do local governments.

Although interpretation and practices vary widely, this includes the police powers to regulate land use (based on common law) and the eminent domain or “taking” power (based on the constitution) to “seize as forfeited to the state” private property for the benefit of the general public with compensation based on fair market value¹⁶. In all land use interventions, the Jeffersonian principle of “home rule” based on historically established local (county) authority is quite prevalent, rendering a high degree of local authority, especially in land use decision making.

Generally, it is much more difficult to regulate private land use vis-à-vis public interests in the United States than in European nations. The primary reason is the lack of consensus about the proper reach of government and public authority (Reilly, 1996). From the beginnings of European settlement of the North American continent, land-hungry immigrants arrived with one paramount goal: to find a piece of secure property. They also imported the feudal English common-law system (Farm Foundation, 1985) with differentiated property rights. Private land ownership was defined as the right to possess, use, manage, benefit from, have secure title to and dispose of. The composite rights represent *exclusive* rather than *absolute rights*, the latter disregarding public interest in the exercise of ownership. The only rights retained by government are sovereign rights, taxation rights, the right to acquire the land by eminent domain with just compensation and the right to *regulate the use of land*. Therefore, private land ownership is perceived as a bundle of rights (Fig. 18), which includes the right *to use or dispose of the land and any of its associated rights*.

Even now, national private property rights movements, backed by provisions of the Fifth Amendment to the Constitution (“*No person shall be held to answer for*

BUNDLE OF RIGHTS ASSOCIATED WITH PRIVATE PROPERTY OWNERSHIP RIGHTS

- USE RIGHTS (subject to public regulatory restrictions such as police powers, eminent domain — public taking and just compensation clause, condemnation and applicable environmental laws).
- LEASE RIGHTS.
- TO MORTGAGE (liens).
- TO SUBDIVIDE (subject to lot splits and zoning regulations).
- DEED RESTRICTION (e.g., conservation and other easements, covenant, development rights).
- SALE OR BEQUEST.
- WATER RIGHTS (riparian, prior appropriation or mixed doctrines).
- MINERAL RIGHTS (including oil and gas).
- DEVELOPMENT RIGHTS (restrictive covenants and police powers: zoning and other ordinances, environmental nuisance, building codes and development guidelines).
- LIENS (taxes and other).

Fig. 18. The U.S. “bundle of private property rights.” These rights are exclusive but not absolute — numerous use limitations apply to preserve and protect the public's health, safety and welfare.

a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offence to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.”), have found powerful champions in the U.S. Congress and courts. This is exemplified by the practical inclusion of development rights as part of private property rights and the compensation requirements as a result of the public eminent domain right. According to a major ruling in 1992 (*Lucas vs. South Carolina*), the U.S. Supreme Court decided that regulations denying “economically viable use of land” require due compensation no matter how great the public interest involved. The “taking” issue is one of the dilemmas of valuing and protecting sensitive habitat such as wetlands (*Palozzi vs. Rhode Island*). In contrast, development rights are not inherently part of private rights in European countries, and therefore public land use restrictions limiting the “highest and best use” alternative of private property do not have to be compensated.

According to a 1994 study by the National Association of Home Builders, the value of private property is very dependent on its immediate surroundings. The potential costs of incentives or regulations that limit the expansion or impact of incompatible land uses — and thereby prevent the reduction of private property values — are not directly compensated by beneficiaries. In essence, land use restrictions designed to improve or restore environmental quality may be viewed as a taking under the Fifth Amendment of the U.S. Constitution (Reilly, 1996).

Despite the “taking” potential, the constitutional hurdle remains high for property owners. First, owners are not automatically entitled to the most profitable use of their land irrespective of consequences for adjacent community properties. Local zoning, nuisance and wetland ordinances restricting the type and nature of development are examples of use limitations. Second, diminutions of value caused by government regulations are uniformly tolerated. Third, virtually all public interests served by environmental laws are a legitimate constitutional limitation. Last, such laws are usually found to substantially advance the public interest. In the United States, significant state and regional differences can be

observed in the willingness to restrict certain ownership rights. The most significant public acceptance of practical land use regulations can be found in those areas that have been settled the longest time and are typified by higher population densities.

The effect of the property rights movement caused several states to adopt legislation to protect property rights. The first is the “takings impact assessment” analogue to environmental impact assessment (EIS) mandated by the National Environmental Policy Act (NEPA). In 1988, the Reagan administration issued Executive Order 12630, which requires that state agencies evaluate most government action and determine whether such action would result in a taking of private property. The second is compensation bills that require states to pay property owners when regulations decrease property market values.

5.2 State Legislation within the National Context

In the United States, states convey authority to local units through acts of the state constitution and legislature. Such powers take two forms — *mandating* and *enabling*. A mandating statute directs a municipality board to exercise certain powers and may vary from very detailed instructions, as in the laws governing uniform accounting and budgeting procedures, to broad grants of power, as for the responsibility to provide for the general health and welfare of the public.

Enabling or permissive statutes do not require local units to act but allow local officials to act if they so desire. Once a local government board votes to use the power, the enabling statutes often prescribe how they should proceed in carrying out the functions. For instance, state law does not require a city council or township board to adopt a zoning ordinance. But if it does, it must give proper public notice and create a zoning board (or planning commission) of so many members and a board of zoning appeals (VerBurg, 1990).

Michigan, for instance, has three zoning enabling acts for three types of local government. The first is the **City or Village Zoning Act of 1921**, which provides a legal basis for ordinances that regulate “...*the use of land and structures, the height, the area, the size, and location of buildings... the light and ventilation of those*

buildings.” The density of population can also be regulated by ordinance and the designation of the use of certain state-licensed residential facilities.

The second, the **County Rural Zoning Enabling Act of 1943**, and the third, the **Township Rural Zoning Act of 1943**, serve the same purpose. The basis and considerations of both zoning ordinances are: “*The zoning ordinance shall be based upon a plan designed to promote the public health, safety and general welfare, to encourage the use of lands in accordance with their character and adaptability, and to limit the improper use of land, to conserve natural resources and energy, to meet the needs of the state’s citizens for food, fiber and other natural resources, places of residence, recreation, industry, trade, service and other uses of land, to insure that uses of land shall be situated in appropriate locations and relationships, to avoid the overcrowding of population (to provide adequate light and air¹⁷), to lessen congestion on the public roads and streets, to reduce hazards to life and property, to facilitate adequate provision for a system of transportation, sewage disposal, safe and adequate water supply, education, recreation and other public needs, and to conserve the expenditure of funds for public improvements and services to conform with the most advantageous uses of land, resources and properties.*”

The broader issue of state natural resource and land use management dates back to the 1800s, when park, wildlife and forestry programs were established for lands in the public domain. Control of the private use of land was possible only by outright acquisition. It was not until the 1920s that states authorized local units of government to adopt zoning and subdivision regulations. In practice, however, lack of effective local control and demand for land close to urban centers resulted in construction within floodplains and destruction of wetlands (Kusler, 1980).

Rural land use planning is often undertaken for economic development with limited emphasis on resource protection. Though a significant number of federal programs have an indirect impact on land use decision making (137 federal programs in 1979, such as the Department of Housing and Urban Development [HUD] with its urban revitalization programs, and USDA/NRCS with efforts to preserve prime farmland, etc.). In reality, land use planning remains largely the domain of local government.

Though some states’ programs assumed some responsibilities after WW II, specifically in the 1970s, most states, including Michigan, re delegated planning

authority to the local level in the 1980-90 period. Oregon and New Jersey are notable exceptions because of their adoption of statewide planning strategies and growth management policies. The federal role is mostly limited to providing funding for city and regional planning activities with specific allocations to public housing assistance (HUD), transportation and economic development (U.S. Department of Commerce, Economic Development Administration).

Planning is accomplished by the development of a comprehensive plan and its implementation through local ordinances and regulations for zoning, subdivisions, housing, nuisance conditions, etc. As specifically authorized under the zoning acts, local authorities such as municipalities and townships may adopt zoning ordinances. In open space preservation and wetland protection issues, township actions are the most relevant, especially when bordering urbanizing regions.

5.3 Zoning as a Regulatory Tool

Zoning is the most widely used form of land use regulation. The state's zoning enabling statutes represent the most common form of land use regulation. These statutes have not undergone a comprehensive update since the 1970s. Recent amendments specify that communities must provide a cluster option for residential developments. The use of many of the other modern tools for growth management has not been authorized.

Zoning ordinances may include the type and density of permitted land use and buildings, height and size of buildings, lot sizes, parking accommodations, signage, fencing and other characteristics of development. The fundamental purpose of zoning is to separate the more incompatible land uses such as intensive agricultural and high-density development or residential and industrial. By this separation, a certain degree of open space will remain, buffer space may be created to reduce potential conflicts, and development is encouraged in the areas designated in local master plans to promote sustainable development.

Three types of zoning can be used to concentrate development in specific areas:

- **Cluster Zoning** — Encourages the grouping of buildings on smaller lots on one part of the site to preserve open space. This zoning typically lowers

the minimum lot and yard sizes requirements. One form of cluster zoning is planned unit development or PUD, which may include setting aside common areas for public recreational use.

- **Overlay Zoning** — A supplemental designation of a zoning district over one or more other zoning districts to encourage certain conditions, such as the preservation of historical buildings, wetlands or downtown residential use.
- **Incentive Zoning** — A zoning provision that encourages developers to provide certain qualities in their developments in return for benefits such as higher density or fast approval of applications. These incentives can be used in downtown areas to encourage residential use, gain open or public space, or enhance or preserve building features in connection with approved developments.

5.4 Other Regulatory Approaches

Various other regulatory approaches are available to direct preferred development. They include various enabling statutes such as the provision of ordinances designed to preserve open space and natural features such as local wetlands, and open space or woodland preservation ordinances. Others include indirect regulatory controls such as investment incentives or constraints associated with the development or restructuring of the local physical service infrastructure. Examples include the designation of service boundaries demarcating areas served by public water supplies or sewer lines. Although less formal in a regulatory sense, they may be equally effective when applied consistently and based on a well-articulated master plan and a consistently implemented growth strategy backed up by sound ordinances that are systematically enforced.

Other enabling statutes include:

- **Land Development.** A relatively recent statute that included land use and development controls (the state Land Division [Plat] Act [Public Act 591 of 1997, as amended]) and the legislation to protect farming operations and agricultural land (Public Act 116 of 1974), which temporarily protects farmland from development in exchange for income tax credits. Though the Land Division Act amendments help streamline the subdivision process by controlling large lot splits (by removing the local authority), local zoning is generally still used to

determine development locations. In addition, Public Act 93 of 1981, the Michigan Right-to-Farm Act, protects farms using generally accepted agricultural and management practices from nuisance lawsuits.

- *Annexation*. Rather than make radical changes to the structure of local government in Michigan (in deference to home rule), the state has supported boundary changes via annexation as a more limited but politically acceptable alternative to creating larger units of local government via amalgamation or the creation of regional governments. Annexation by cities of land in contiguous jurisdictions is undertaken to provide access to urban infrastructure services such as sewage treatment and public water supplies and thereby promote industrial and housing development and accrue income from property taxes. As an urban growth management tool, annexation potentially makes it easier to set tighter limits on development. However, annexation by itself is not a long-term solution to sprawl (VerBurg, 2002).
- *P.A. 425 Agreements*. Public Act 425 of 1994 — by means of a “425 agreement” — enables land to be transferred temporarily or permanently between contiguous local government units by common agreement. The act provides a substantial degree of flexibility in terms or conditions of the agreement. The units may share revenue from the increased valuation on the transferred parcels. The transfers may be very limited in nature — for example, limited to the purposes specified in the agreement (VerBurg, 2002). However, such agreements must not be considered a satisfactory basis for developing and implementing long-term urban growth strategies. They are considered temporary and incremental measures.

6. Non-Regulatory Approaches to Land Use Planning

6.1 Introduction

Among the more successful community-based open space or wetland protection strategies are those involving landowners who share a community's desire to protect important natural features. It is frequently possible to accomplish protection through a variety of negotiated agreements, avoiding the potential conflict

and administrative expense of regulatory protection. For instance, non-regulatory wetland, ecosystem or prime farmland protection could be part of a well-conceived plan to identify and protect open space or distinctive natural resources that a community regards as particularly important. In some cases it could potentially replace a regulatory program; in others, it can supplement regulatory efforts. This chapter will review the range of non-regulatory methods that is potentially available for land use planning in Michigan.

6.2. Public Service Boundaries

One of the most effective growth management controls is the deliberate placement and expansion of public services — controlling access to sewer and public water supplies and other public utilities. Limiting access through an *urban service boundary* can direct long-term growth to areas that provide for a more efficient delivery of urban services and that minimize environmental impacts. Expansion of an urban service boundary over time can be reflected in a master land use plan and relevant ordinances and permits the careful planning of educational, recreational, retail and public transportation functions as part of a carefully planned growth management strategy.

6.3 Purchase or Transfer of Development Rights

Two somewhat similar open space protection techniques, purchase or transfer of development rights, involve the acquisition of only a portion of the privately held rights in real property. Such techniques have been successfully used in farmland preservation and also show potential for wetlands protection. These programs are more developed in other regions of the United States and are only recently finding their way into local growth management programs in Michigan. *Purchase of development rights* (PDR) programs involve obtaining development rights on a parcel of land from private landowners, whereas *transfer of development rights* (TDR) shifts development rights from one privately owned parcel to another. In either case, the original property owner is compensated for the reduction in property value. The primary difference between PDR and TDR is the disposition of the development rights after they are severed from the property. In a PDR program, ownership of the development rights is simply retained by the

purchaser and "retired." The purchaser can be a governmental body, a private party, a non-profit organization such as a local land conservancy or a number of other entities. The land is permanently excluded from development but the owner can use the remaining rights unencumbered.

TDR programs are more complex. The development value of a land parcel is established and the owner compensated, and the property development rights are transferred to another parcel. These rights can either be sold directly by the owner or brokered through an administrative agency. This transaction may be useful to a developer because the transfer to the receiving parcel may result in higher building density or a more intensive use. To work properly, a jurisdiction must first establish "receiving zones" to accept the transferred rights. Theoretically, the receiving zone is more appropriate for development because of such factors as better infrastructure or roads, proximity to other intensive uses or other considerations. The "sending zone" would be an area where low density, lack of infrastructure, or the presence of vulnerable natural features such as wetlands or prime farmland would make intensive development inappropriate or less desirable.

PDR programs are now developing in Michigan, as authorized by state legislation, but their application is limited to agricultural land or land adjacent to it. Moreover, these programs tend to be expensive, particularly where they are entirely supported by local funding. One such successful case is the implementation of an effective PDR program on Michigan's Old Mission Peninsula in Grand Traverse County, providing development protection for vineyards, orchards and other important agricultural land. Most of the time, however, public funding is wholly inadequate to meet local funding requests. The earlier cited Michigan House Task Force report indicates, for instance, that about 80 percent of requests could not be funded in 2001.

The applicability of PDR programs for wetland protection or urban renewal in Michigan is uncertain. TDR programs seem to be highly controversial and are in some cases vigorously opposed by certain interest groups. Opposition apparently centers on the issue of selecting sending and receiving zones and the resulting economic impact to property owners within those zones. The long-term economic interests of a property owner and the potential reduction of

development value could exceed the actual compensation in the PDR transaction. Conversely, a property owner within a receiving zone and with no interest in more intensive development may also be harmed by lower property values as surrounding parcels undergo conversion to higher density and possibly less compatible land uses.

The success of a PDR initiative is based on a good master plan with relevant ordinances. The Grand Traverse County Master Plan provided a clear set of goals and strategies that helped (together with the physical limitations) enable the success of the open space preservation program on the Old Mission Peninsula. In other cases, such as the Ann Arbor, Mich., area, pending PDR initiatives have resulted in significant land purchases and a rapid increase in land prices in anticipation of PDR effects on development. This may also accelerate development in nearby townships. Some practitioners argue that most PDR acquisitions occur in areas not subject to near-term development pressure and, therefore, are not a very effective deterrent.

6.4 Easements

Easements have historically been used to transfer specific rights or privileges from a property owner to another party and are similar to PDRs in that title to the land remains with the original owner. Easements have been employed frequently by public agencies and utilities to secure rights-of-way for roads, power lines and gas transmission pipelines, and by private parties to gain access to their lands across the land of another owner. Their use to protect wetlands and other natural features is increasing. Such easements are typically known as *conservation easements*.

The Conservation and Historic Preservation Easement Act of 1980 specifically authorizes conservation easements. A conservation easement constitutes a legal agreement voluntarily negotiated between landowners and other parties, typically a government agency or a non-profit organization. These agreements can be structured to limit or prohibit certain activities on or uses of a parcel and are thus more flexible than PDRs or TDRs. They can be arranged as deed restrictions or binding covenants, a simple contract or other legal instrument; however, the agreement must be recorded with the deed to be enforceable against subsequent property owners.

The flexibility of conservation easements makes them an attractive addition to local wetland or farmland protection programs. They can be applied to limited portions of a parcel of land and are therefore more acceptable to property owners than easements that restrict total use. A conservation easement can include only wetlands and surface waters or may also include a buffer around these features. An easement can also specify limitations on development across a parcel of land to ensure protection of natural areas.

Another attractive feature of conservation easements is that a party other than a public agency can hold them, thereby lowering the administrative burden on local governments. Involving a local land conservancy, for example, enables lands deemed critical in a local wetland, open space or prime farmland preservation strategy to be protected and the task of monitoring compliance with the agreement to be absorbed by the conservancy rather than a public agency. In addition, the provisions of a conservation easement are enforceable by anyone, not just by parties named in the easement agreement. This adds neighbors, interested citizens and the local community at large to the monitoring network.

Because the negotiation of a conservation easement represents a use limitation on a parcel of land, it has a determinable value. The owner is typically compensated for this value but can realize substantial tax benefits if the transaction includes a donation of all or part of the negotiated price, particularly if non-profit organizations are involved. Integrating a charitable donation component into a conservation easement program can significantly reduce the costs of acquiring easements.

6.5 Voluntary Preservation and Public Education

With the growing recognition of open space, including wetlands and other sensitive natural features, as a valuable community resource and the increasing concern over its depletion, a number of property owners are interested in protecting or restoring wetlands on their property without compensation. Providing information or technical assistance to these property owners can be a valuable, low-cost addition to a local wetland or open space protection strategy. Numerous state and federal agencies and a number of private organizations provide technical and financial assistance to landowners interested in voluntary preservation.

These include several units of the U.S. Department of Agriculture and the U.S. Fish and Wildlife Service, state natural resources agencies, and private organizations such as Ducks Unlimited, the Wildlife Habitat Foundation, the Nature Conservancy and Pheasants Forever. Programs offered by these and other organizations are described in detail by Cwikel (1992).

Additional technical assistance and a comprehensive education strategy at the community level can supplement the efforts of federal and state agencies and private organizations. As landowners are made aware of the benefits that wetlands or other open space provides to them and their community, and of their options to protect them, some may wish to participate in a local wetland, farmland or woodland protection program. Voluntary protection programs can provide substantial benefits at a very low cost, some of which will be absorbed by other public and private service providers. The primary drawback to voluntary programs is their lack of permanence. Non-development agreements associated with these programs, if they exist at all, usually do so for a limited time. The property owner retains full rights to the land and the property can eventually be withdrawn from a program by current or future owners.

6.6 Fee Acquisition

Through the outright purchase of wetlands or other properties with unique natural values is an expensive proposition, it is the only method that ensures complete public access and control over real property. Because it does not involve regulations, it is often more politically acceptable than use restrictions. Despite its relatively high cost, acquisition of property may be justified for particularly critical or vulnerable community resources. Financial assistance is available from state and federal agencies but is extremely limited. State funding typically requires a substantial match of local funding and is available only when the property slated for acquisition represents a high regional or statewide priority.

Some communities may be able to invest general fund revenues in wetland or other unique land acquisition or secure funds through special assessments or bonds, but political realities indicate that this strategy will be employed infrequently. Many acquisitions involve corporate or private gifts or grants or other private funds, either alone or in combination with the use of public resources.

Acquisition of land by local governments, however, does not necessarily guarantee permanent protection of wetlands and ecologically important areas unless the necessary easements or deed restrictions are recorded at the time of the transaction. A portion of today's wetlands (especially those smaller than 5 acres without immediate state protection) can easily become tomorrow's industrial park as elected officials are replaced, other opportunities arise, or community attitudes toward growth and development change.

It is in fee acquisition that local land conservancies can provide the greatest benefits. Conservancies (e.g., the Nature Conservancy) are formed specifically to acquire land, or rights in land, and to preserve its natural features, including wetlands or other unique ecosystems. The past decade has seen an enormous growth in local land conservancies in Michigan, which now number more than 60 and can be found in all regions of the state.

Another approach is for local communities to pass a land preservation ordinance that specifically enables the acquisition of land to be held (and managed for its natural or functional value) in perpetuity. Michigan's Meridian Charter Township is one such example. In 2000, a 10-year millage was approved to acquire properties of high ecological and open space value. A land preservation ordinance was passed, officially providing a mechanism for implementation of the program. A Land Preservation Advisory Board made up of elected officials and citizens was established to administer the program. Since the program began, more than 100 acres have been purchased or donated, and acquisition of another 160 acres is pending.

6.7 Tax or Economic Incentives

In the United States, private property values are assessed at the local level, and the *assessed value* is used to generate local taxes and to fund community education, road maintenance, and police and fire protection. This poses a special challenge because property tax levels tend to reflect *potential market value* and, therefore, pose a relatively high local tax on farmland, resulting in pressure to sell land for development. In addition, the revenue of land sales for potential development by farmers mostly exceeds the revenue from farming, resulting in pressure to cease farm operations. In other industrialized countries, land taxation reflects *current land use* (based on current growth boundaries and development plans) rather

than *potential uses*, and local financial needs are largely met from national sales and income tax revenues.

Unfortunately, in Michigan, as in many other states, current property rights and tax structures do not lend themselves easily to the recognition of development restrictions or other legitimate use restrictions resulting from the presence of wetlands and other natural features. Though changes to Michigan law that would correct this problem have been discussed in recent years, no amendments to the General Property Tax Act have advanced much beyond the discussion stage.

6.8 Current Status of Programs to Preserve Open Space Values

Open space protection programs to preserve ecological values in an urbanizing environment are not widespread, either nationally or in Michigan. Active state-level open space preservation programs operate in Alabama, Arizona, Colorado, Florida, Georgia, Massachusetts, Nevada, New Jersey and Pennsylvania. Local community programs have been initiated in places such as Richmond, R.I.; Phoenix, Ariz.; Gallatin County, Mont.; Woodbury, Conn.; Montgomery County, Pa.; and Camden and Somerset counties, and the Pinelands, N.J. (information about these programs is readily accessible online). The Greenbelt Alliance of the San Francisco Bay is perhaps the most widely recognized substate regional open space program. Under the Greenbelt Alliance, cities such as Berkeley, Santa Rosa, San Jose, Rancho San Carlos, Davis and Marin, and Sonoma County have initiated open space planning programs. Nationwide, there are a number of land conservancy programs such as the Land Trust Alliance, the Nature Conservancy and the Rails-to-Trails Conservancy that are operated by private non-profit organizations.

In addition to farmland preservation programs in Michigan, communities that purchase land to preserve open space include Washtenaw County, Grosse Isle Township in Wayne County and Meridian Township in Ingham County. All three programs are funded through public taxation. The Meridian program differs from the other approaches in that it employs a systematic approach using weighted multivariate land-screening criteria based on ecological principles to evaluate open space¹⁸. The Washtenaw program focuses on certain priorities such as the acquisition of land for park and recreational areas. The Grosse Isle

program, though publicly funded, seeks to acquire open space properties when opportunities arise.

Such programs operate reactively to preserve open space in certain local jurisdictions — usually those that are more highly developed and fiscally enriched — but do little to establish a comprehensive, proactive strategy or policy framework to effectively promote anti-sprawl actions.

7. The Role of Federal, State and Local Governments in Urban Growth Management

7.1 Introduction

The Jeffersonian *home rule* model — delegating substantial powers to local units of government, principally counties (in Michigan, practically cities, villages and townships) — could be viewed as the most appropriate administrative model at a time when most states were formed. During this era, transportation and communication challenges were enormous, space was abundant, and natural resource conflicts and environmental concerns were virtually nonexistent. Home rule reinforces the notion that local officials were the most informed decision makers capable of dealing with day-to-day affairs, and that the appropriate checks and balances of elected representation would ensure effective governance.

A further complication is the delegation of *home rule* to even smaller units of government — the incorporated cities and (general law or charter) townships — which increasingly isolate themselves from their neighbors in land use planning decisions and the development of growth strategies, seeking property tax advantages that drive aspects of local well-being such as the funding of education and other essential services.

Today, the notion of a complete reliance on *home rule* can be challenged as an outdated concept in a time when land use planning and the concept of sustainable development — and conservation of previous natural resources and agricultural productive capacity — are linked within the international framework of reduced trade barriers and agricultural subsidies, security and resource scarcity concerns, and transboundary environmental effects.

The *Dillon Rule* is viewed as the fundamental doctrine regulating the relationship between state and local governments. Such interpretation is based on writings by Judge John Dillon who, in 1868, provided a legal framework for this relationship. Dillon sanctioned state control over cities and judicial supervision of that control with clarification that the powers of municipalities were limited to powers that were “expressly granted, necessarily or fairly implied, or absolutely indispensable”¹⁹ — establishing a strict relationship as municipalities created by the state. Over time, municipalities (cities and, for certain services, counties) assumed more responsibilities, including maintaining standards in education, health and delinquency. As such, it would be logical for states to assume planning responsibilities for those goals, objectives and strategies that serve overarching concerns, especially involving statewide or regional economic development and land use concerns. Regional planning and cooperation create opportunities for the efficient delivery of services and reduce the risk of service duplication among competing localities.

Current land use decision making in Michigan and many other states in the union typically:

- Fails to recognize comparative advantages of land use options, including land productivity, transportation cost and environmental impacts.
- Occurs in isolation of the decision-making process by contiguous units of government.
- Incurs conflicts in cross-boundary designation of land use plans, zoning ordinances, taxation policies and watershed management.
- Is not addressed in long-term state planning by identifying regional and sector-specific economic growth preferences or consideration of their aggregate benefits, costs or environmental consequences.

A look at some European or Southeast Asian experiences is a clear warning that, in many cases, lack of such planning approaches and policy initiatives will come at a significant environmental and social cost — and a much higher cost for remedial actions and strategies. Not only are the spatial and temporal dimensions of this issue critical, but also an integrated, coherent approach to land resource utilization and policy formulation, at all levels of government, must be considered essential. The latter notion is addressed by sustainable development that provides a systems

approach to problem identification, analysis and solution, using the appropriate indicators and measures of progress.

Peter Senge²⁰ in the *Fifth Discipline* (1990) identified systems thinking as a new basic skill to add to the basic four disciplines of our thinking and reasoning skills. In trying to make sense of the major crises facing American families and communities, systems thinking is essential. Crime, health problems, homelessness, substance abuse, highway deaths, pollution, abandonment of our cities and deteriorating school performance all initially seem totally unrelated phenomena that require years of effort and uncountable resources to resolve. Yet, from a systems perspective, they are all remarkably connected by land use policies that are formulated at the individual local and municipal levels. Although these local land use decisions are influenced and driven by state and federal policies — especially policies associated with economic development planning — local units can still largely control land use patterns.

Urban sprawl — with its environmental, social and economic impacts—is not purely a function of the market. It has been induced by federal, state and local government policies. Clearly, many established government policies and subsidies have either encouraged haphazard patterns of growth or discouraged smarter growth. Likewise, federal, state and local governments can also do much to curb sprawl and promote sustainable urban development.

7.2 The Role of the Federal Government

Development decisions in Michigan and elsewhere in the United States have always been within the purview of local and, to a much more limited extent, of state governments. Federal actions, however, have had a profound impact on those decisions and ultimately shaped communities and growth patterns nationwide.

It can be argued that the federal government has subsidized growth and sprawl and discouraged equitable land resource use through various programs. In 1934, the Federal Housing Administration began protecting homeowners and home sellers against default by insuring long-term, low-down-payment mortgages. These loans allow interest deduction on home mortgage interest payments. The higher the income bracket of the homeowner, the lower the true

cost of a mortgage. This practice encourages homeowners to build larger, more expensive homes on large lots because the true cost of the mortgage is subsidized by tax deduction. Most loans were exclusively for homes in areas that were thinly populated, dominated by newer homes, with few minority or immigrant enclaves nearby. As a result, these loans subsidized growth in suburban areas, often at the expense of older urban neighborhoods or communities. At the same time, rehabilitation of existing housing stocks was ignored.

The federal government's historic support of new road construction led to increased mobility of homeowners and businesses to locate at the urban periphery (and expand metropolitan areas). During the first decade of interstate construction in the 1950s, many homes were razed and urban highways destroyed the vitality of some city neighborhoods. Increased mobility and information technology development also encouraged people to live farther away from their jobs and provided commuters with easy access to central business districts. Soon after residential development occurred along these transportation corridors, commercial development followed — more often than not in the form of sprawl and strip development.

Conversely, support for alternative modes of transportation, especially public transportation, languished. This process was exacerbated by a generally healthy economy and incentives for middle- and upper-income families to build new and second homes outside existing cities. To find these larger, more expensive properties, city dwellers are generally drawn into the countryside and away from the central city. This increased urbanization of rural communities.

Furthermore, government funding of new school construction also influenced development patterns. For example, between 1970 and 1990, Minneapolis-St. Paul built 78 new schools in the outer suburbs and closed 162 schools in good condition located within its city limits.

In a 1999 survey conducted by the Fannie Mae Foundation, urban experts were asked to rank the top 10 influences on the American metropolis over the past 50 years. The two top-ranking influences cited were the 1956 Interstate Highway Act and the Federal Housing Administration's mortgage financing program. The Housing Act of 1949 was ranked fourth. The single most important message, according to this report, is the overwhelming impact of the federal

government on the American metropolis, especially through policies that intentionally or unintentionally promoted suburbanization and sprawl. Now, as localities and states pursue “smart growth,” the federal government needs to be a partner in this effort, too.

The federal government can provide assistance to state and local governments to address the varied issues associated with dispersed development, including policies encouraging sustainable economic growth, initiatives to public and private sectors responsible for economic, environmental and social equity, job creation, and promoting effective use and protection of natural resources (Goldman, 1995).

The U.S. Environmental Protection Agency (USEPA), the U.S. Department of Housing and Urban Development and other federal agencies can help states and communities realize the economic, community and environmental benefits of smart growth by:

- Providing information, model programs, and analytical tools and effective growth strategies to inform communities about growth and development.
- Working to remove federal and state barriers and incentives that hinder smarter community growth.
- Creating new resources and incentives for states and communities pursuing smart growth.

The federal government can promote smart growth through transportation, taxation, housing and other policies. It has already increased transportation choices with the Transportation Efficiency Act for the 21st Century of 1998 (TEA-21). TEA-21 surpasses its predecessor, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), by guaranteeing an even higher percentage of federal transportation funds for mass transit. This provides cost-effective, pollution-reducing transportation alternatives for people in core metropolitan areas, thereby making development at the urban fringe — relying on private transportation and confronted by traffic congestion — less attractive.

The Taxpayer Relief Act of 1997 curbs another incentive to exurban growth. It exempts the first \$250,000 of a home sale from capital gains tax even for homebuyers who do not reinvest the gain in a new home. This allows homebuyers to move to smaller homes in the city instead of purchasing more expensive homes on the suburban fringe simply to protect their capital gains from taxation.

Location efficient mortgages (LEMs), which were recently initiated with \$100 million from Fannie Mae, promote affordable housing while reducing sprawl. LEMs allow homebuyers to capitalize on the savings that result from living near transit service, usually in dense urban locations. LEMs add the avoided costs of an extra automobile — such as car insurance, maintenance and fuel — into the amount of household income available for mortgage payments. This accounting qualifies the buyer for a higher mortgage.

Many other federally sponsored programs could be used by states and local governments to promote better growth management. Most of these are enabling programs — the federal government does not intervene directly in urban growth management.

By comparison, the United States has significant federal environmental protection legislation. Responsibility for some of these mandates, such as the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), or, in some cases, wetland protection regulations, has been delegated to the states. Other protection measures are based on state-specific, federally delegated implementation agreements — such as is the case with wetland protection measures in Michigan. Success has been varied and is characterized by reliance on local land use controls that tend to be inconsistent, controversial and facilitation-oriented. Increasingly, federal environmental policies are implemented by providing incentives for behavior change rather than by effective regulatory enforcement. Some assert that in a federal system of government, regulations are relatively ineffective in achieving good environmental outcomes, and a new paradigm of “industrial ecology” places emphasis on rethinking the roles of public and private spheres (Center for Environment and Planning, 2000).

In recent decades, township planning and development programs have been greatly influenced by federal and state government policies through revenue sharing, grants-in-aid and technical assistance programs.

7.3 The Role of State Governments

Within the framework of the U.S. Constitution, state governments retain the primary responsibility for their citizens' well-being. The protection of public health, safety and well-being often requires limits and constraints on private property rights. Therefore, it

may be considered a state's fiduciary responsibility to promote responsible land use together with the promulgation of effective land use controls. Because problems are typically of greater local relevance, states have delegated these powers to local governments in most instances (Held and Visser, 1984). Because of the federal constitutional framework, states often act more like national governments in land use planning matters. As pointed out by the American Planning Association, if state legislation does not mandate planning, local communities can ignore the state's intention to implement planning (American Planning Association, 1999).

State governments may, however, establish growth management plans, require communities to meet a minimum level of household density in exchange for infrastructure construction funds, use federal transportation funds to promote mass transit systems and pedestrian walkways, require urban growth boundaries, and limit development on farmland and natural habitat. Maryland's Smart Growth Initiative, for example, establishes a 10-agency subcabinet that uses the state's \$16 billion budget to induce development in areas with existing or planned infrastructure.

About 10 to 12 states have adopted strong policy initiatives to address multiple concerns related to urban growth management. Three leading states are Oregon, Minnesota and Washington. Although many other states have adopted growth management programs, they are largely token (Daniels, 1999). In Michigan, recent legislation is beginning to address a number of issues related to growth management:

- Joint Planning Commission Act (P.A. 226 of 2003). Permits two or more units of government to create a single joint planning commission to address planning issues in all or part of the territory of the participating local units of government.
- PUD/TDR legislation (P.A. 227, 228 and 229 of 2003). Amendments of the planned unit development sections of the three zoning enabling acts allowing approval (unless explicitly prohibited by PUD regulations) of a PUD with open space that is not contiguous to the rest of the PUD.
- Fast track land bank. Six bills intended to help urban communities return tax-reverted land into productive use and put it back onto local tax rolls.

- Blight regulations. Six bills to help urban communities revitalize neighborhoods by targeting property owners in violation of zoning, building and blight codes, and by streamlining the process to get a property cleaned up.
- Brownfields. Reallocation of funding from \$20 million to \$75 million under the Clean Michigan Initiative Bond Fund for grants and loans to local units of government and brownfield redevelopment authorities for facilities with redevelopment potential.

If a state is unable or unwilling to set policies or pass legislation that addresses uncontrolled growth and encourages smart growth practices, it should at the very least provide assistance to local decision makers. This assistance need not be in the form of financial support, although well-placed investment could be beneficial. In a recent study on growth projections led by Michigan State University, it became clear that neither the state nor local governments have the data or the quantitative and analytical tools necessary to understand and manage factors that cause sprawl or effectuate remedies (Skole et al., 2002).

Actions taken at the state level can help address this concern by providing access to information and tools to assist local decision makers. In 2001, the Michigan's governor's office established the Department of Information Technology to help improve information needed for transportation planning, economic development and environmental protection. This program was augmented in 2002 by the creation of the Michigan Center for Geographic Information, which provides access to statewide geospatial data. Together, these agencies can help bring to bear information technology for guiding policy and planning statewide. Local governments can increasingly look to the state for leadership, technical expertise and information resources to help make more informed decisions.

7.4 The Role of Local Governments

As discussed in Chapter 3, the institutional framework for local government in Michigan was established during the pioneer years of early settlement and development. Changes to the basic framework during the 20th century were very limited and incremental.

The current institutional framework provides limited coordination between the functions of state government agencies in Michigan and activities of

local government, despite the fact that state government decisions have major impacts on urban development. The bulk of existing legislation for land use planning in Michigan was developed in the period 1930-50.

The various local government units — counties, cities, villages, and charter and general law townships — have been given separate enabling mandates by the state to plan and zone land within their respective jurisdictions. The planning acts enable local units of government to prepare comprehensive plans and supporting ordinances, but this is not mandatory. The legislative fragmentation between planning and zoning is highly cumbersome, to say the least. Zoning codes do not necessarily have to be based on comprehensive plans. The (appointed) planning or zoning commission's recommendations to elected bodies are advisory only.

The relationship between planning and zoning functions of different units of local government is also highly cumbersome. Thus, for example, county zoning may apply only to the unincorporated areas not included under a township zoning ordinance. Many townships adopt and administer their own zoning ordinances. This is most common when a county zoning ordinance results in actions that are contrary to township interests. But many local governments choose to defer to the county and permit county zoning to regulate land use. Most counties with zoning ordinances are in the northern part of the state (VerBurg, 1997).

Some planning and zoning statutes enacted during the 1930s were based on model acts prepared by the U.S. Department of Commerce. Very limited legislative change to the basic provisions has occurred since then. They are typified by separate acts for each class of local authority, with minimal coordination and without the purposeful integration of planning and zoning authority. The state government has been reluctant to extend and update the statutes to enable greater flexibility in their application. There is also no state requirement for consistency between contiguous plans or between county and local plans, or for that matter, any requirement to have plans at all. One criticism of current zoning practice is that agricultural zoning is typically a form of residential zoning (for instance, permitting residential development in commercial agricultural districts based on a 40-acre lot size and road frontage limitation), rather than a unique

designation as agricultural use, as is the case in some other countries.

Local bodies have been very slow to assume planning functions. In a 1979 survey, many townships and municipalities had zoning ordinances but no plans, and still fewer had subdivision regulations.²¹ The quality of efforts to guide land use in smaller cities and more rural areas of the state is debatable. Zoning ordinances are far more common than plans, even today. Even though zoning ordinances are not designed to be policy documents, in many local jurisdictions they have become the sole means by which land use policy is defined at the local level.

Within the existing institutional set, there are few incentives for cooperation and coordination. Instead, there are numerous barriers: the strong history of home rule, competition for tax base, the multiplicity of goals and objectives within the individual units of local responsibility, inadequate conflict resolution mechanisms, limited information and training for decision makers and lack of political will at the state and local levels. Many of these barriers can be overcome through voluntary cooperative agreements that have been enabled through joint planning commission legislation (P.A. 226 of 2003), so-called 425 agreements, and other innovative approaches to land use planning.

7.5 The Role of Stakeholder Groups in Growth Management

Governments are made up of people and should not be thought of in the abstract sense. People — developers, commercial businesses, landowners — are responsible for land use decisions, good or bad. In recent years, many special interest groups have been in conflict with units of local government over proposed developments. These conflicts often end up in court or other administrative procedures that have high costs in time and money. The result has been delays, higher costs for projects, added costs for attorneys and courts, and often, dissension within the community. Not surprisingly, it has been difficult to bring about change in such an environment. There is a manifest need to develop a new partnership among all levels of government and citizens that respects local home rule but results in regional and statewide cooperation on land issues of greater than local concern (Americana Foundation, 1992).

Growing numbers of individual stakeholder groups and citizens are seeking an increasing role in local planning and decision making. They include:

Land developers — Land developers convert one type of land use to another (usually driven by the canard of “higher and better use”) in the interest of economic growth. Growth, as opposed to stagnation, is both necessary and desirable for communities as long as such growth is managed. Developers should not solely drive growth, however. They should and do play the role of implementers of the demand for growth as expressed by the residential, retail, commercial, business and industrial drivers. They respond to demands for housing, schools and other institutions. They can be assisted by well-defined community land use plans that identify areas for development together with the controls or restrictions on types of development.

Retail and commercial interests — Retail and commercial interests provide goods and services that contribute to the quality of life — as well as the economic lifeblood — of a thriving community. Healthy retail and commercial sectors contribute revenues to the community through taxes and jobs. Interests in the planning process will be on changes in zoning and master plans that prevent incompatible land uses.

Manufacturers — Healthy manufacturing and other industrial sectors contribute revenues to the community through tax revenues and jobs. Along with healthy retail and other economic sub-sectors, manufacturing helps to build the local economy, assuming that the cost of resource extraction is favorable and environmental impacts are acceptable. Improperly managed operations and growth in this sector may lead to inefficient use of resources, environmental contamination, disproportionate distribution of negative externalities among its citizens and other negative impacts on the quality of life. Business and industry interests in the planning process will be on changes in zoning and the master plan that facilitate growth and prevent public conflict and incompatible land uses.

Recreation and tourism providers — Recreation and tourism industries assume the responsibility for providing leisure and recreational enrichment opportunities as part of a community's quality of

life. Their interest in land use planning is to ensure an adequate proportion of recreational facilities balanced between citizen demand and land allocated to other uses.

Economic developers — Economic developers focus on economic growth or progress by the attraction, retention or expansion of business opportunities that increase employment and tax revenues and leverage other community economic activity. Their interest in land use planning is to ensure that business growth is promoted or not adversely affected by other potentially competing demands such as open space or farmland preservation. At the same time, they pursue a balanced and diverse local economy that is structurally sound in the long term.

Farmers, foresters, miners — Farmers, foresters and miners provide many of the raw materials needed to drive the local economy or satisfy basic needs. Their interest in planning is to ensure the long-term viability of their economic sectors and preserve their incomes and opportunity while seeking environmental compatibility with competing natural resources uses.

Residents/voters — These constitute the ultimate decision makers. Generally they represent a multitude of interests (e.g., the local business owner might be a resident homeowner and might send his or her children to the local schools). Their influence and effectiveness is shaped by active participation in elections, representative organizations or governance, particularly if representing specific interests or voting blocs. Their interest in planning is largely dependent on niche and status within community, special interests and a stake in the final decisions (particularly if a proposed and undesirable use is in their “backyard”).

Special interests (e.g., environmental preservationists, landowners, business operators and owners, non-profits, youth service organizations, housing providers, criminal justice, etc.) — Each group represents a focused agenda for community planning and development and can become vocal if the agenda is ignored or subverted by decision makers or other interest groups. Each group can individually or through coalitions have a significant impact on, or even destroy, the public planning process.

7.6 Where to From Here?

In summary, the existing institutional framework provides few incentives for cooperation. Instead, there are numerous barriers to cooperation and coordination, including the strong history of local control, competition for tax revenues, the multiplicity of goals and objectives within the individual units of local responsibility, inadequate conflict resolution mechanisms, limited information and training for decision makers, and lack of political will at the state and local levels.

Local communities need guidelines on what types of land uses are necessary and appropriate according to environmental suitability, social acceptability and economic equity, as well as technical feasibility. Local decision makers must be able to balance public needs and private interests, land protection and uncontrolled development, quality of life and continual business expansion. They must also be aware of the interests of neighboring governmental units and seek compromise on issues that cross jurisdictional boundaries. Local communities need the tools and training to evaluate development options and the knowledge to use such tools wisely to make informed decisions.

In Michigan, as in many other states, the process by which rural land is converted to urban uses depends almost entirely on the initiative of private decision makers rather than local or state government policies. Local land use plans, as implemented by traditional zoning ordinances, are more often permissive than proscriptive. Interests of landowners and developers dictate zoning codes and comprehensive plan provisions. As a result of many zoning and land use conflicts between local jurisdictions and landowners/developers, the courts, as supported by the U.S. Constitution and concerns for constitutional and property rights, play a dominant proxy role in land resource planning and developing. The fear of litigation drives many local zoning board decisions. The global sustainable development debate has not made a strong impact on land use planning in Michigan.

All municipalities in the state are authorized to develop master plans. State statutes do not mandate specific contents for the plans nor require communities to consider adjacent areas in developing their plans. There are no incentives provided in the enabling legislation to either enhance interjurisdictional

cooperation or coordinate planning and zoning functions. Moreover, Michigan state government has been reluctant to extend and update statutes to enable greater flexibility in their application to respond to growth management issues.

In most states, incorporated places that have been granted specific powers of self-government by the state exercise these powers within their boundaries. Urbanized areas beyond the boundaries of incorporated places come within the jurisdiction of townships or counties. The authority of these governments is limited, however, to the powers that their respective states have delegated to them, and they are typically underfinanced to provide public services. In Michigan, annexation laws, along with 425 agreements, were passed to help address this lack of interjurisdictional cooperation. But this must be viewed as only a short-term solution.

The emphasis on local initiative and the absence of a state land use plan in Michigan means that planning policies and decisions in contiguous local government jurisdictions may be quite different. Ideally, the whole urban region, including its rural townships, should be within a single regional authority to facilitate comprehensive, long-term land use and development planning.

The need to reform the local government institutional framework and the role of state and local government in planning in Michigan is urgent. The multiple statutes effective today were enacted many years ago. The state legislature passed the proposed Coordinated Planning Act but virtually gutted it with amendments. New legislation may provide guidelines to assist local planners and decision makers with both local and regional interests in land development.²²

Despite mounting evidence of the need to change the way Michigan citizens treat land resources, statewide leadership has yet to coalesce around the issue. Public-spirited coalitions have marked Michigan's history, bringing about an updated state constitution, school finance reform, and extensive public systems of highways, libraries and parks. Coupled with a tradition of widespread public participation in governmental decision making, Michigan's opinion leaders represent a critical ingredient in land use reform. The same tradition represents opportunities to seek consolidated action and should recognize the urgent need to develop a cohesive coalition able to articulate and press for adoption of land policy reform.

8. Planning and Growth Management in the Netherlands and New Zealand: A Comparative Perspective with Michigan

This chapter presents an overview of spatial planning and growth management approaches in two other industrialized nations: the Netherlands and New Zealand. These countries were selected because they represent a broad spectrum of population density, land use intensities and environmental impact considerations. Michigan falls between them in development pressure and population density.

The Netherlands, with about 16 million people and less than one third of Michigan's land area, and New Zealand, with a population of about 4 million and a land area almost twice the size of Michigan, have population densities of about 392 persons/km² and 15 persons/km², respectively. As such, these countries represent two extremes of land development pressure compared with Michigan, with a population density of about 68 persons/km². New Zealand also pursues a rather proactive policy on resource management and planning. Planning policy in the Netherlands may be viewed as more reactive than New Zealand's — combating land use pressures and conflicts, and managing growth and environmental impacts associated with intensive land use patterns and a capital- and technology-intensive agricultural sector associated with relatively high nutrient and pesticide loadings.

Dutch land use intensity, both agricultural and industrial, is very high, and environmental impacts and land scarcity are historically reflected in land use planning and policy. One could characterize Dutch land use policy as reactive and agricultural sector-oriented during the early part of the 1900s and proactive and comprehensive since the 1950s. New Zealand land use pressures, though significantly less, have resulted in a more proactive and comprehensive approach to natural resource management and planning, as reflected in the Natural Resource Management Act (1991). Both national approaches have received considerable international acclaim as viable and resourceful approaches to land use planning and economic development. As part of both of these regulatory frameworks, policy mandates and planning instruments have been developed to direct urban development and control sprawl. The most recent developments are briefly reviewed. Though contextual differences exist between these societies, these two case studies demonstrate the significance of political commitment, leadership and institutional capability to effectively address growth management pressures.

8.1 Planning in the Netherlands

The Netherlands is considered a decentralized unitary state²³. The national government and national parliament legally determine the decision-making authority of its 12 provinces and 496 municipalities. Table 6 provides an overview of the governmental levels²⁴.

Table 6. Governmental organization of the Netherlands.

Level of government	Elected representative bodies	Non-elected body with executive responsibilities	Executive bodies
National	Parliament — with First and Second Chambers	Cabinet (typically coalition government composed of three or more parties)	Ministries
Provincial	Provincial council	Appointed queen's commissioner	Provincial executive
Municipal	Local (city) council — includes municipality with adjacent rural area (similar to a U.S. county)	Appointed queen's mayor	Municipal executive

This division of administrative responsibilities - national, regional (provincial) and local (municipal district, including surrounding rural area) - delegates a high degree of authority to the regional and municipal levels within the framework of a hierarchical planning system. In many respects, this system may be compared to the U.S. system of state, county and local administration, in that the latter can be considered a combination of major and minor municipalities and their surrounding rural townships. Comparatively speaking, the European Union may increasingly be viewed as the fourth or federal layer, with the obligation to translate directives of the European Union into national legislation. This hierarchical planning system is administratively enforced by the allocation of national tax revenues.²⁵ The E.U. also provides funds to implement specific directives such as agricultural policies and the development of nature preserves or ecosystem networks.

Institutions responsible for implementing land use planning in the Netherlands are the national government, the provinces and the municipalities. Table 7 summarizes the main policy institutions at each level.

8.1.1 National Land Use Planning

National planning is formalized in a *national plan*. *National spatial policy* is promulgated — under auspices of the Council of Ministers to ensure policy coordination — by the Ministry of Housing, Spatial

Table 7. Policy institutions of the Netherlands (European Commission, 1999).

Level of public administration	Institutions
National	<ul style="list-style-type: none"> • National Spatial Agency (DGR) • National Spatial Planning Commission • VROM Council (Housing, Spatial Planning and Environment)
Provincial	<ul style="list-style-type: none"> • Provincial Spatial Planning Committee • Provincial government
Municipal	<ul style="list-style-type: none"> • Municipal government

Planning and Environment (VROM) (European Commission, 1999). An outline of institutional responsibilities is provided below (Fig. 20).

Adherence to national strategic plans is ensured by the States General²⁶ by exercising the *right of approval*. The minister is advised by the following institutions:

- The Governmental Commission of Planning — the highest level commission for coordinating the planning policies of the national government.
- The Ministerial Council (VROM) — an independent council that advises the national government and represents many outside constituencies.
- The National Spatial Planning Agency — assists the minister of VROM in developing spatial planning policy.

National land use planning is promulgated by a *national plan* composed of major spatial planning decisions of four types:

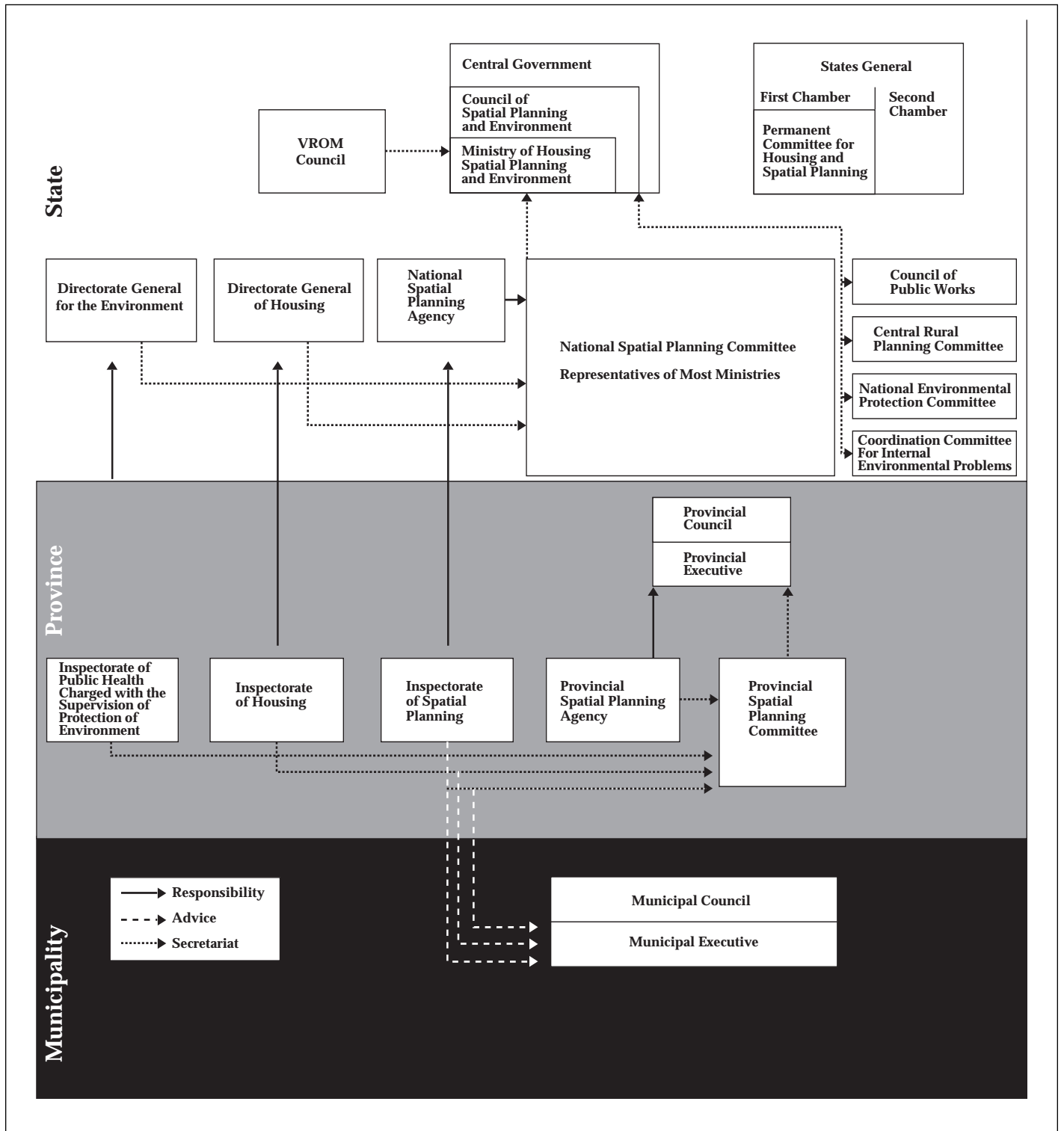
- *National planning policy document* (“nota ruimtelijke ordening”) — a document (revised every 10 years) that articulates spatial policy directives for provincial and municipal governments on a sectoral basis, including aspects of the types and location of housing, urban development, nature and landscape preservation, water management and infrastructural development.
- *National structure plan* — a spatial outline of national land use policy, such as regional urban growth, environmental preservation or industrial development directives.
- *Structure scheme* — a national structure plan for a single policy sector.
- *Particular projects of national importance*

In the latest and *Fifth National Policy Document*, land use development guidelines are formulated through 2020, with additional perspectives for the period up to 2030. Topics include needs for residential develop-

Fig. 19. The Netherlands.



Fig. 20. Institutional mandates for spatial planning in the Netherlands (European Commission, 1999).



ment, including the mix of private and social housing, preferred locations for residential development and urbanization, nature and landscape development and preservation, watershed management and the spatial requirements to accommodate economic growth. It is a legally binding document that outlines regional development guidelines to be refined by provincial and municipal government land use plans.

National spatial policy is presented in structural outline (general locational preferences) plans and national policy documents. These documents contain the main principles of the spatial policy further reinforced and detailed in spatial allocation plans at the provincial and municipal levels. Each *key decision* specifies its duration and is (mostly) directive or legally binding. Projects of national importance can be legally binding, such as those associated with the development or augmentation of major infrastructural facilities or networks.

To assure cooperation among various jurisdictions or levels of government in the implementation of key decisions, the national government may issue:

- *Directives* on what a province should include in its regional plans and what a municipality should include in its allocation plan (specific land use designation plan).
- *Orders* that *regional plans* or *allocation plans* be revised.

In addition, these directives and orders may but need not be based on a key spatial planning decisions (European Commission, 1999).

8.1.2 Provincial Planning

The Netherlands comprises 12 provinces (Fig. 21).

Provincial land use planning responsibilities include:

- The detailing of relevant aspects of national land use planning policy at the provincial level — *provincial* (or *regional*) *plans*.
- The implementation of provincial planning policy.
- The supervising of policy for spatial planning of the municipalities within the province — *local structure plans* and *land use destination* (or *land allocation*) *plans*.

The provincial governmental powers are divided constitutionally among:

- The crown's commissioner.
- The provincial council, which promulgates spatial policy.

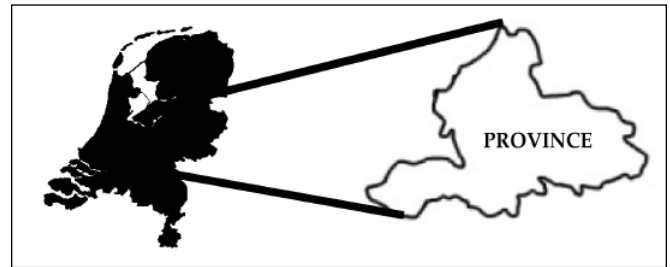


Fig. 21. Dutch provinces.

- The provincial executive, which prepares and develops policy through plans and memoranda. The provincial executive is assisted by the provincial spatial planning agency.

The provincial planning committee is advisory to the provincial executive and coordinates departmental actions and policies. It also plays a key role in the vertical coordination and detailing of national and local land use planning. To this end, the provincial (regional) council develops a *regional plan* — enabled by the Spatial Planning Act — that is revised every 10 years. It identifies desired future development in the province and, although not directly legally binding for citizens or local jurisdictions, identifies generally desired future developments at the municipal level, to be subsequently detailed in local *structure plans* and local land use *destination plans* (see below).

The provincial executive has the authority to approve local land use plans on the basis of their compatibility with the regional plan. To enforce compliance, the province may issue specific orders and directives to municipalities.

8.1.3 Local Planning

Provinces or regions are subdivided into municipalities (“gemeentes”), which include a municipal seat — in the major town — and minor towns or villages with

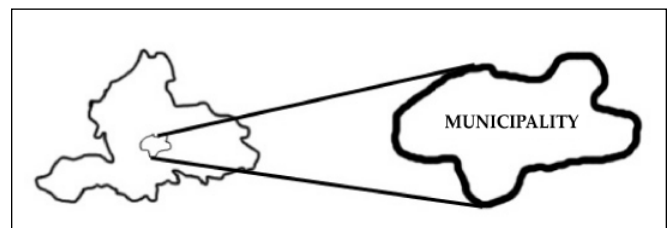


Fig. 22. Local planning unit — Includes major municipality with minor towns or villages and surrounding rural areas (this could be compared to a major incorporated U.S. city and its surrounding townships or county).

their surrounding rural areas. They possess similar authority, but their autonomy is subordinate to provincial and national land use policies. The Spatial Planning Act mandates that municipalities prepare and implement local land use policy and plans. They may also implement special national and provincial land use policies on the basis of funded mandates. Policies are typically further detailed at the local level by means of *structure plans* and *destination (land allocation) plans* (see below).

For implementation of national planning objectives at the regional and local levels, provincial and municipal government funding largely originates from national government sources in the form of general or specific grants based on the number of inhabitants. Funding allocations to the provinces and municipalities reflect the nature and magnitude of development priorities as identified in the *national plan*. Therefore, this funding provides a significant land use control mechanism at the local level.

National revenue is largely raised through national income and sales taxes. Taxation at the provincial and municipal level is very limited. This is an important difference between the Netherlands and the United States because it eliminates the major incentive for local governments to pursue development solely for the purpose of expanding the local tax base. In the Netherlands, local taxes include a limited form of real estate tax (the major source) and a levy for municipal services such as water and energy (natural gas) consumption, and sewage and solid waste services. Local tax revenue amounts to about 16 percent of local funding (Fig. 23). Major capital improvements may be financed by bond issues. Municipal councils may determine local property tax rates subject to national government-imposed limits. Non-profits such as church organizations and agricultural land are exempt from property tax. Special taxing authority is provided to local water boards, which may proportionally assess beneficiaries for drainage services and flood protection. Very little tax revenue comes from provincial levies.

The local administrative powers are constitutionally divided among the appointed mayor (discussions on changing this to an elected position are currently taking place), the municipal executive and the elected municipal council. The municipal council is principally charged with the approval and implementation of local land use planning policy. The mayor and

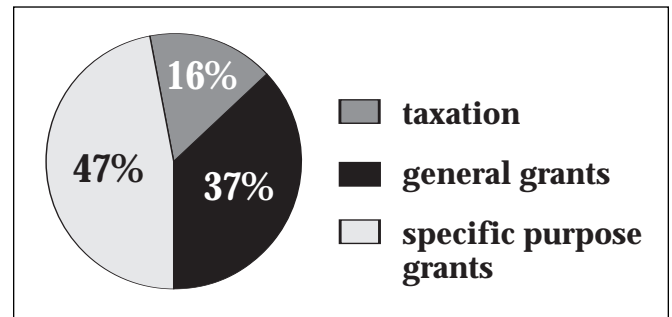


Fig. 23. Municipal income sources (1999) (Committee of the regions, 2001, as cited in Abbing and Peeten, 2003).

executive branch (principally the Department of Public Works and City Development) are responsible for the preparation of plans and supporting memoranda.

The major planning implementation tools are the structure plan, the allocation plan, the urban renewal plan and the living conditions ordinance, the latter for use in urban areas.

8.1.3.1 The Structure (“Structuur”) Plan

The *structure plan* outlines the future structural development of the municipality with its rural hinterland and is to be revised every 10 years. It is comparable to the master or comprehensive plans of Michigan townships, but it is more detailed in defining the desired planning objectives and general locations of major land uses. It also outlines the direction and limitations of urban expansion into the surrounding rural area. Sometimes it reflects interjurisdictional plans if jointly prepared and approved by an adjacent municipality — the so-called intermunicipal structure plan. The function of the plan is to determine prospective spatial and socioeconomic development, and to serve as a reference for the formulation of municipal planning policy by merging national and regional land use policies with local preferences.

The *Spatial Planning Act* gives the municipal council the right, but not the obligation, to adopt a structure plan. It is not legally binding but may have legal and potentially financial consequences for certain actions (European Commission, 1999), such as the identification of areas for urban renewal, land acquisition, expropriation and urban expansion. It is also the basis for the approval of the *land allocation plan* by the provincial government.

8.1.3.2 The Land Allocation (“Bestemmings”) Plan

The *allocation plan* is a legally binding document, much like the zoning and wetland preservation ordinances used in Michigan. The *Spatial Planning Act* mandates that each municipality establish an *allocation plan* subject to revision every 10 years for the territory outside the built-up areas. For urbanized areas, the development of an *allocation plan* is optional. The allocation plan effectively designates specific land use for a 10-year time span, demarcating urban growth and service boundaries and the detailed location, specific land use and density of residential, institutional, recreational and industrial land development. All building permits are issued in compliance with the *allocation plan*. Subject to reviews and approvals, exemptions may be granted with cause, analogous with the zoning variances in Michigan. However, exemptions are rarely granted and are subject to extensive approval proceedings.

Allocation plans are generally quite detailed in their designation of land uses, including detailed maps with the specific type, the land use mix and the height of development permitted for a given location. Local jurisdictions have some latitude in determining the specific land use plan details, including use regulations.

8.1.3.3 The Urban Renewal Plan

This plan has the same legal status as the *allocation plan* and addresses the revitalization of urban areas. It is mandated by the *Town and Village Renewal Act* and is implementation-oriented, whereas the *allocation plan* is prescriptive in nature.

8.1.3.4 Living Conditions Ordinance

This urban development tool is also mandated by the *Town and Village Renewal Act*. It is a proactive ordinance designed to prevent urban deterioration specifically associated with living and working conditions, or aesthetics. With this ordinance, intervention takes place more quickly and permits a municipality to influence urban revitalization more effectively than would be case in an *allocation plan* or an *urban renewal plan*. This ordinance may specify use rules to prevent or reverse deterioration of residential or commercial buildings. It is designed to enforce standards rather than improve conditions.

8.1.4 Growth Management and Open Space Preservation

The structure and allocation plans reflect national and regional growth priorities in aggregate land use categories (space allocated, housing units, commercial and industrial acreage, etc.). The implied hard growth boundaries for a designated time period encourage concentrated development patterns of compact urban agglomerations.

The planning instruments outlined above are instrumental and effective in directing and controlling growth. First, they focus on the development of the “compact city model”: the creation of mixed land uses (living, working, education, recreation and public services) reachable by various modes of public transportation, a constant revitalization of the central city including its housing and retailing sectors, and the promotion of walkable communities enhanced by easy access to schools and recreational facilities. Second, the local government is an active participant in the development process, buying land and controlling infrastructural development and defining access to basic services such as water, sewer and utilities. This amounts to precisely defined growth boundaries over time, prevents significant land speculation, and directs and controls residential development in green space as necessary to accommodate urban expansion where it is most suitable or desirable. The notion of *development rights* held by private landowners is therefore limited by the growth zones identified in *local allocation plans* and modified for future time periods, as necessary, to serve the public interest and development priorities. Both planning practices and fiscal policies reinforce long-term planning at the national, regional and local levels while effectively preserving open space.

8.2 Planning in New Zealand

More than 90 percent of New Zealanders are urban dwellers, even though the country's economy is reliant on exporting primary products to distant global markets. A majority of the population lives in and around the five metropolitan regions: Auckland, Hamilton, Wellington, Christchurch and Dunedin (Fig. 24, page 41). The drivers of urban growth in New Zealand are much the same as in Michigan, even though the scale of the problem is relatively much smaller. Contemporary urban growth trends throughout New Zealand reflect long-standing

cultural preferences for low-density living in periurban settings dependent on easy access to private transport. These forces have encouraged population dispersal that, if not managed well, could become sprawl. The growth pressures in New Zealand cities, as elsewhere, are focused on the suburban and fringe locations while a number of the inner-city areas are in relative decline in population and economic activity. Metropolitan Auckland, a large part of the North Island north of Taupo and Christchurch in the South Island face many of the same pressures and potential problems as urban areas in the United States.

With a population of just over a million, Auckland is a relatively small metropolis by global standards. However, its population is distributed over a large land area equivalent to that of European and Asian cities with populations two to three times that of Auckland. Until recently, the metropolitan form and function of Auckland had evolved since the 1870s in an incremental ad hoc fashion. As in Michigan, fragmented, overlapping local government jurisdiction was considered a major constraint on effective governance. The cumulative impact of shortsighted decisions has become manifest during the past decade. Auckland has suffered a series of serious crises that have been attributed to an overburdened and aging water, transport and power infrastructure.

Local government authorities within Auckland embarked on a strategic metropolitan growth management initiative about a decade ago that has the potential to enhance significantly the institutional capacity for regional governance. A number of other provincial metropolitan cities in New Zealand, including Christchurch and Tauranga, have also recently embarked on strategic planning initiatives that have been motivated by Auckland's apparent success. The new Local Government Act, enacted in 2002, envisages elected local government authorities in New Zealand taking a lead role to formulate and implement strategies for sustainable development in collaboration with other stakeholders.

The following section will review the significance of the Auckland initiative from a wider perspective of collaborative planning. Lessons from around the world suggest that sticking to an agreed vision over the long term is crucial to achieving community objectives for promoting urban sustainability. In Auckland, New Zealand's largest metropolitan city, the region's councils have finally decided to work

together, in cooperation with central government and other stakeholders, to implement the growth strategy and meet regional needs. They have been compelled to do this in response to the growth crisis facing the metropolitan community.

8.2.1 The Institutional Framework

Most of the responsibility for urban growth management in New Zealand rests with elected regional and city and district councils. Central government has refrained from taking a strong proactive role to provide policy direction in this sphere. Thus, New Zealand does not have a national urban growth strategy or a national land use strategy. The apparent rationale for this policy stance on the part of successive central governments has been that the land use regulation function is deemed primarily a local government responsibility, arguably a reflection of the ideological importance attached to private property ownership in New Zealand. This situation may bear a distant resemblance to the *home rule* ideology in some states in the United States, such as Michigan. However, in contrast to the more *voluntary* and limited planning role of local government in Michigan, in New Zealand elected urban territorial local authority jurisdictions have been *required* by the parliament since the 1950s to undertake land use planning and regulation under the town and country planning legislation.

Developing capability for planning at a metropolitan regional level has proved more problematic. In the metropolitan regions of Auckland, Wellington, Christchurch and Dunedin, fragmented local government, parochialism and fiscal competition for growth among contiguous authorities have constrained regional cooperation in the past. Two particular objectives of the wide-ranging local government reforms under the *Local Government Act of 1988* were to amalgamate small territorial jurisdictions into larger units to provide economies of scale and stronger capability for governance at the local level, and at the regional level, to amalgamate special purpose ad hoc jurisdictions such as river catchment (watershed) boards with overlapping jurisdictions into elected regional authorities.

The principal legislative instrument for urban planning in New Zealand is the *Resource Management Act of 1991 (RMA)*²⁷, which has several positive attributes as an environmental planning statute. It

provides a statutory framework for a holistic and integrated approach to environmental planning and management based on ecological and democratic principles. It replaces a large number of formerly separate and sometimes inconsistent overlapping environmental statutes to provide a relatively integrated focus on natural resources and the built environment.

The purpose of the act is defined in terms of the principle of sustainability. The act recognizes that government has an important role in environmental planning and defines a hierarchical, three-tier planning framework. This hierarchy is based on the assumption that decisions should be made as close as possible to the level of the community of interest — where the effects and benefits accrue. Within this hierarchy, regional councils have a pivotal role in integrated resource management; the role of city and district councils is focused more explicitly on land use planning. Though there have been difficulties in securing cooperation between the local and regional government tiers in some metropolitan communities such as Christchurch, local government authorities in Auckland have been relatively successful in developing a collaborative approach to address issues of urban growth management, as discussed in the next section.

The more recently enacted Local Government Act of 2002 significantly widens the political mandate of local government (territorial and regional councils) in New Zealand to empower it to promote the objective of sustainable development encompassing the social, economic, cultural and environmental well-being of communities. A key instrument to achieve this objective will be the preparation and implementation of *long-term council community plans* (LTCCPs) based on wide-ranging community consultation and input by stakeholder groups. The LTCCPs are expected to become the key strategic planning and public accountability document for all council activities. With specific reference to urban growth management, the LTCCPs are expected to provide the long-term policy direction for regional policy statements and district plans prepared under the RMA. How well these two planning statutes will succeed in working together to address problems of urban growth management in New Zealand communities remains to be seen.

8.2.2 The Auckland Experience²⁸

Burdened by a historical legacy of lack of political leadership and poor planning, Auckland has recently manifested a stronger political commitment to address issues of urban growth management within the metropolitan region. In New Zealand, urban growth pressures and associated congestion and pressures on services are most severe in Auckland:

- The Auckland region is home to almost 1.2 million people and has grown by 90,000 people (8.4 percent) since 1996.
- The region has 30 percent of New Zealand's population of 3.8 million.
- 54 percent of population growth over the past two decades was due to natural increase, with the balance due to domestic and international migration.
- 32 percent of New Zealand's workforce is in the Auckland region.
- The region is projected to reach 2 million people by 2050 (an average increase of 20,000 people per year).
- Much of the region's infrastructure needs upgrading to meet increasing demand and higher environmental standards. Over \$2 billion needs to be spent in the next 25 years on water supply, drainage and transport alone.
- Car use is growing by around 4 percent per year.

The Auckland Regional Council was established following local government reforms in 1988. Its predecessors had not proved particularly effective in addressing issues of growth management on account of *local* parochialism and pressures from vested development interests. The regional council's urban growth strategy is for *regional* urban containment matched by urban intensification policies at the local authority level. This strategy has been developed during the past 10 years and is being implemented through a two-pronged approach. The first is via the *regional policy statement* prepared in 1994 within the statutory context of the RMA. The second is a non-statutory collaborative strategic planning initiative that commenced in 1997 to bring together the technical and political interests of the Auckland Regional Council and the constituent local authorities and other public and private sector stakeholders. This initiative is known as the Auckland Regional Growth Forum.

The Regional Policy Statement

Metropolitan urban limits (MULs) is a technique used in the operative *Auckland regional policy statement* to define the boundary between the urban area and the rural part of the region. The notion of controlling the outward spread of Auckland through an urban growth boundary mechanism has been a policy in Auckland regional planning documents for nearly 50 years. The reasons for doing this have changed over time.

Originally, the primary objective was to sequence growth so that infrastructure could be provided more efficiently and to protect highly productive agricultural land. More recently, the main objectives of the MULs have been broadened to protect sensitive rural and coastal environments from peripheral growth and to contain and intensify the urban area.

The method by which the metropolitan urban limits have been determined and implemented in Auckland has also changed over time. Earlier, under former town and country planning legislation, the determination and implementation of the MULs were left primarily in the hands of the individual territorial local authorities (TLAs), which was not very effective. Under the RMA, the location of MULs has been defined in the *regional policy statement* (RPS) by the Auckland Regional Council. The RMA stipulates that district plans must not be inconsistent with regional policy statements. Thus, the MULs within the RPS have a controlling effect on land development policies of individual territorial local authorities. For this reason, the role of the Auckland Regional Council to determine urban growth limits was initially contested by some territorial local authorities, but it was subsequently affirmed by the courts.

The Auckland Regional Growth Forum

The Auckland Regional Growth Forum (ARGF), established in 1996, is a cooperative partnership between the Auckland Regional Council, the region's territorial local authorities and other stakeholder groups to further develop and implement the strategy for managing the effects of growth in the Auckland region as set out in the regional policy statement. The ARGF was established to examine the options and alternatives for future growth and to manage its effects on the environment, infrastructure and local communities. Faced with a rapidly growing population, a demand for 300,000 more dwellings by 2050 and huge infrastructure costs, the councils were

compelled to work more closely to resolve urban growth issues, a significant political departure from the situation hitherto.

The Auckland Regional Growth Forum has 10 political members (mayors and councilors), three from the Auckland Regional Council and one each from the seven territorial local authorities. A steering group composed of senior officers from the same authorities, plus the Ministry for the Environment, provides overall technical direction. The Auckland Regional Growth Forum is a standing committee of the Auckland Regional Council. It is funded by the Auckland Regional Council through the regional land rate. Other participating councils also fund the time of their elected representatives and staff members to support the ARGF. A 1998 amendment to the *Local Government Act of 1974* formalized the existence and role of the ARGF and established Infrastructure Auckland to make grants for land, passenger transport and storm water infrastructure projects in the region.

The ARGF has developed a *regional growth strategy* looking ahead to the year 2050, which is now being implemented (Fig. 25).

The need for such a strategy reflects the councils' desires to work more collaboratively to resolve urban growth issues. The Auckland *regional growth strategy* is a product of over three years' planning involving technical investigations, political workshops, and extensive consultation with public and private sector organizations in the region, as well as the general public and central government agencies. It builds on a draft strategy published in 1998 and takes account of comments on that document. The *regional growth strategy* emphasizes an integrated approach to the long-term management of the Auckland region. The strategy brings together a wide range of important policy directions for the region, encompassing a partnership approach between ARGF members and close consultation with their stakeholders and communities.

The Auckland *regional growth strategy* was formally adopted in November 1999. It provides a vision for what Auckland could look like in 2050 with a population of 2 million (Fig. 26, page 42). It promotes quality, compact urban environments and identifies, among other things:

- Areas in the region where urban development should not occur.

Key Stages in the Development of the Regional Growth Strategy

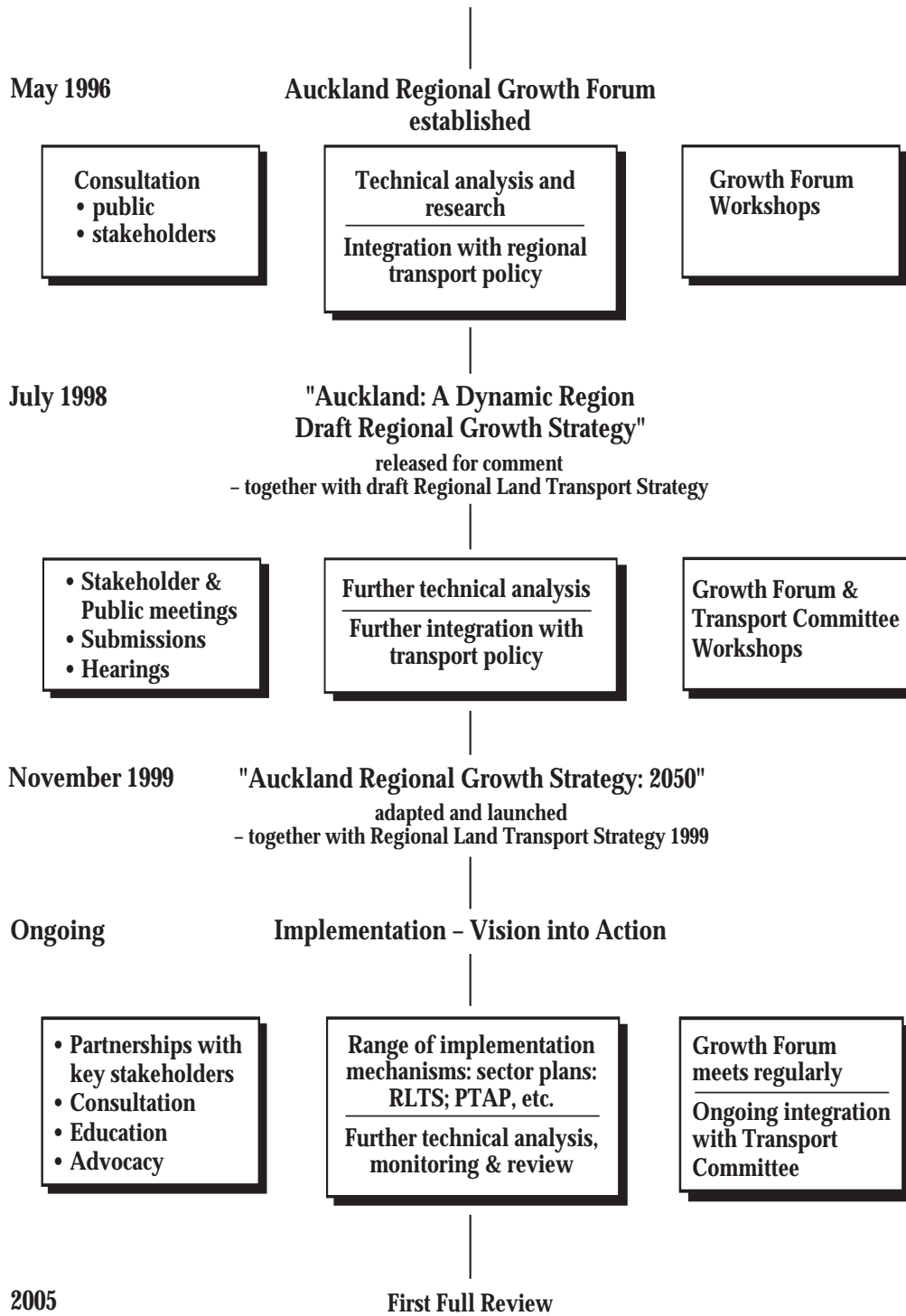


Fig. 25. The ARGS Development Process (Auckland Regional Council, Regional Growth Forum, 1999 — www.growthforum.govt.nz).

- Opportunities for peripheral urban development and intensification in the future.
- Appropriate locations for further employment growth.
- Implications for transport and other regional infrastructure.

Chapter 2 of the growth strategy provides a list of the values that the regional community has said it wants to protect and enhance over the next 50 years. These desired regional outcomes include improving air and water quality; protecting the coastal environment, habitat and heritage; and ensuring employment and housing choice and business opportunity. Chapter 3 of the growth strategy outlines how these outcomes will be achieved and what will be important for successful implementation of the strategy. The key outcome areas relate to:

- Social infrastructure.
- Housing choice and affordability.
- Amenity and design.
- Business and employment opportunities.
- Transport.
- Regional transport needs.
- Servicing employment areas.
- Transport needs of rural and coastal towns and suburban areas.
- Transport needs of intensive urban areas.
- Environment.
- Physical infrastructure.

Implementation Process

When the region's councils signed the *memorandum of understanding* in November 1999, they affirmed their support for and commitment to the implementation of the Auckland Regional Growth Strategy.

The process for implementing the *growth strategy* has five themes:

- Partnerships and relationships.
- The need for alignment of policy and funding.
- Long-term vision and identified short-term actions.
- Wide and adaptable range of implementation mechanisms.
- A process to keep the vision alive.

Keeping the vision alive is a key role of the ARGF. It is also responsible for coordinating the implementation of the strategy, as well as its monitoring and review.

Growth forum partners (the Auckland Regional Council and the territorial local authorities) are developing a strong advocacy role. They are principally responsible for ongoing participation and for aligning their own policy and funding to support the strategy. The ARC is also responsible for the *regional land transport strategy*, environmental management, regional plans and purchase of passenger transport services from public transport operators. The territorial local authorities are responsible for local land use planning and infrastructure provision. Implementing the sector agreements involves participatory community processes and a close working relationship with infrastructure providers, landowners and the development industry.

A range of policy mechanisms is being used to implement the *Auckland regional growth strategy* (Fig. 27).

It is expected that policy approaches and tools will inevitably evolve and change over time and around the region through an adaptive learning process. Some of the key drivers of the implementation process are:

- ***Translating vision into action***

The key planning approach is to provide more detail about the timing, sequencing and form of growth and associated infrastructure through *sector agreements* (discussed below). This process seeks to bring the broad vision of the *regional growth strategy* down to action and to fine-tune what the strategy means on the ground.

- ***Aligning policy and funding***

The region's councils are committed under the memorandum of understanding to align their corporate policy and funding priorities and processes to support the strategy. This means that councils have agreed to initiate changes, within three years, to regional and district plans under the *Resource Management Act of 1991* to ensure consistency with the *regional growth strategy*, and to implement the endorsed sector agreements. They also agreed that by no later than the 2003-04 financial year, their individual strategic, long-term financial and asset management plans and funding

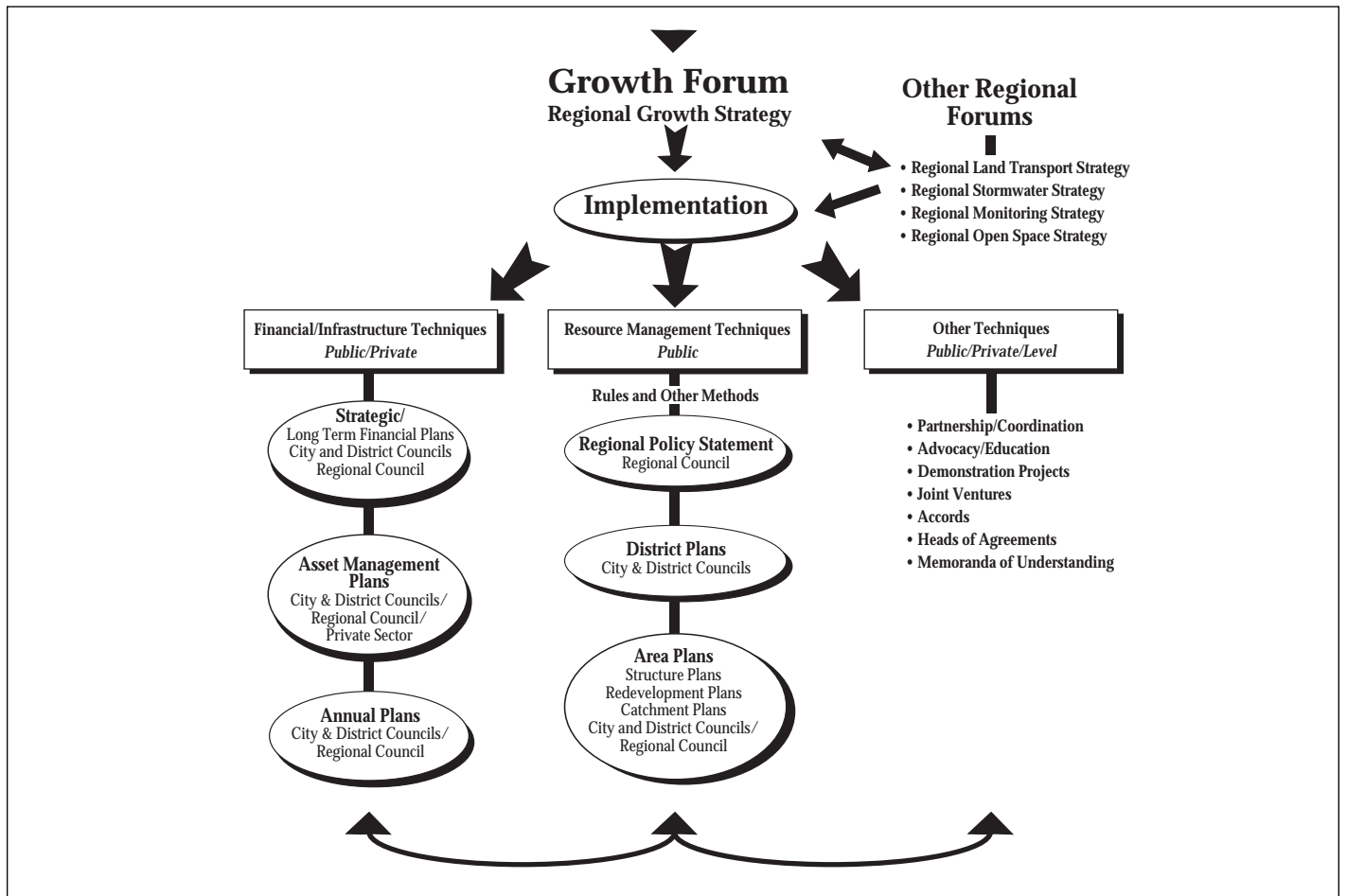


Fig. 27. Policy mechanisms to implement the regional growth strategy (ARGF, 1999).

policies would clearly identify and support the implementation of the *regional growth strategy*.

- **Sector agreements give more of the detail**

A sector agreement identifies capacities for growth in each of the regional sectors and the timing and sequencing of the release of that capacity to 2021. It also identifies the provision of associated infrastructure, when statutory processes to release will commence and how these processes will be funded. Sector agreements have now been developed and endorsed for all parts of the region.

The **Southern Sector Agreement** (covering sequencing, timing and capacity for urban development in various districts) was endorsed by the ARGF in March 2001. Consequently, the councils have identified changes to district and regional plans to adjust the metropolitan urban limits (MULs) and to incorporate new greenfield areas. Planning is also

under way for more intensive nodal developments. The sector will accommodate a further 106,000 in population in the next 20 years, and 275,000 in population over 50 years through greenfield, nodal and infill development. The southern sector councils are now working on a rural sector agreement to understand more clearly the capacity and demand for rural growth and its implications, both in the rural areas and on the take-up of urban development opportunities.

The **Central Sector Agreement** was endorsed by the ARGF in September 2001. The central sector, which falls entirely within Auckland city limits, will accommodate up to a further 94,000 people by 2021. Priority areas for growth include the central area and western and eastern strategic growth management areas (SGMAs) identified in the *Liveable Communities 2050 Strategy*. This includes existing suburban centers as well as new development areas.

A joint **North-West Sector Agreement** was endorsed by the ARGF in September 2001. This agreement will add population capacities of 76,000 to North Shore City, 74,000 to Waitakere City and 71,000 to Rodney District by 2021. In Waitakere, the council is working through more detailed planning matters associated with intensification within the existing urban area, the sequencing of development and MUL changes for the future growth areas in the northern part of the city, as well as resolving outstanding district plan appeals.

- **Getting the transport network right**

An almost doubling of the population will have major impacts on the transport system — major transport improvements are needed. These will have significant community and environmental implications.

An effective transport system is a key component of the *growth strategy*. The strategy sees a shift in land use patterns to focus growth in more intensive mixed-use centers associated with access to the northern, western and southern passenger transit corridors, as well as the main arterial roads. The growth strategy recognizes that transport requirements and priorities for employment and residential areas (rural, suburban and intensive) will differ.

The concentration of more people in an urban area gives more opportunities for better passenger transport — more choice of routes and higher frequencies. Passenger transport investment can also be a catalyst for achieving urban intensification. Significant improvements will be needed to support the mixed-use, more intensive centers and corridors. Careful design will be essential to maintain and improve liveability in these areas and to manage the conflicting needs of pedestrians, cyclists, buses, cars and passenger transit systems. Future infrastructural investment will also be needed to maintain accessibility to the region's arterial network and access to the port and airport.

The *regional land transport strategy* is the key mechanism to develop the transport system. Released in 1999, it is currently under review. The region's *passenger transport action plan* identifies passenger transport investment required to help achieve transport and growth objectives.

- **Cost-sharing arrangements**

Much of the Auckland region's infrastructure is already under pressure and needs upgrading to

meet increasing demand and higher environmental standards: wastewater and stormwater treatment, water supply, transport, energy, refuse disposal, as well as education, health and community services and open space. Over \$7 billion needs to be spent in the next 25 years on water supply, drainage and transport alone.

Though a mixture of land tax and user charges will continue to meet the bulk of those costs, development levies and other funding mechanisms are expected to feature more prominently (e.g., congestion pricing). Other funding bodies such as Infrastructure Auckland (transport and stormwater), the government's road funding agency (Transfund), and service delivery companies such as Watercare and private companies such as Telecom will also be important in the mix. The coordination of this investment is crucial.

- **Monitoring.**

A monitoring program has been developed with a threefold focus: measuring growth in the region, measuring the effects of that growth on valued aspects of the region and measuring the implementation efforts of the forum partners. A crucial part of the *regional growth strategy* is the concept that the document will change as circumstances change. Such changes might include central government policy reforms or significant market shifts. Likewise, periodic monitoring may indicate that strategy outcomes are not being achieved over time. Some key indicators being monitored are: Is the growth strategy promoting strong supportive communities, a high quality of living and natural environment, and good accessibility? Are more people living in intensive mixed-use areas? Do they like it? Are they traveling less for work and leisure, and have travel choices improved? Can new and expanding businesses find suitable premises or land in the right locations and with the appropriate infrastructure? Are the beaches any cleaner? Are people happy with local parks, shops, and health, recreational and education facilities? How do they rate Auckland as a place to live?

The growth strategy is also subject to an annual audit of performance. This focuses on whether each of the growth forum partners (the region's councils) is carrying out its responsibilities for implementing and supporting the growth strategy. Certain commitments are outlined in the *memorandum of understanding* and in the sector agreements, endorsed by all councils.

The results of the monitoring program are used to assess whether the outcomes of the strategy are achieved and whether changes to implementation methods or the policy itself are needed when the strategy is reviewed. The strategy looks out 50 years, and the achievement of some of the desired regional outcomes will be measurable only in that longer term. The growth strategy will be reviewed every five years. The first major review will be in 2004-05, when there will be an opportunity for wide public and stakeholder input to complement research and monitoring data.

8.2.3 Conclusions

In contrast to the other metropolitan cities in New Zealand, Auckland has manifestly been more successful in crafting workable institutional arrangements for developing and implementing a strategy for addressing wide-ranging and interrelated concerns related to Auckland's urban form and structure sustainability framework. These issues have been recently addressed in Auckland through a process of public dialogue and research in the context of the preparation of the *Auckland regional policy statement* and the parallel *urban growth forum*. The forum considered strategic growth issues for the next 50 years. More significantly, this forum brought the councils together and, as an important milestone, led to the signing by both mayors and chief executives in November 1999 of a joint *memorandum of understanding*. Central government has played a key role in encouraging collaborative planning.

That memorandum also identified the urban growth-related issues to be covered by all councils and service agencies in three sector agreements covering the whole region. This work was undertaken during 2000-01 and included a program for development stages, management of the urban limits and provision of utility services. Sector agreements have been prepared by the local councils in consultation with the regional council, service providers, central government agencies, landowners and the private sector. Each sector agreement also defines a means of monitoring the program to ensure it meets the targets of the *regional growth strategy*.

After the urban growth forum's memorandum of understanding was signed, sector agreements were adopted within the second three-year electoral term of the councils. Thus, the whole of this non-statutory exercise that binds the political and technical arms of

the city/district councils together with the regional council took only six years and was free from major Environment Court (and High Court) actions, in significant contrast to the experience with the *regional policy statement* during the mid-1990s. It could be argued that such a public information and consultation process is essential for all of the five metropolitan regions in New Zealand. It provides leadership and guidance on sustainable development and lays the groundwork for managing cumulative effects of urban growth and change within the context of the RMA.

Because of contextual differences, however, it would be unrealistic to expect that the Auckland growth management model can be read across elsewhere in New Zealand or, indeed, overseas. Inevitably, tensions continue to surface in the negotiations among various Auckland stakeholders during the course of implementing the growth strategy. What the Auckland case study clearly demonstrates, nevertheless, is that in a plural land-owning democracy such as New Zealand or Michigan, an urban metropolitan region cannot be planned by a single regional authority alone. Cooperation, mutual respect and collaboration must be achieved between district and regional councils as planning authorities, other statutory and community stakeholder groups and central government. An agreement or memorandum of understanding outside the statutory RMA process, as emerged from the Auckland Regional Growth Forum, can be an effective political catalyst and a foundation for a statutory regional plan. The memorandum was necessary to the development of an agreed *regional growth strategy* and management of the Metropolitan Urban Limits (MULs). The outcomes of these consultative processes can then be embedded in the more explicit statutory provisions of the *regional policy statement* (RPS) for a regional settlement strategy and in the more detailed district plan provisions for land use regulation by territorial local authorities.

The relationship between the LTCCPs, required to be completed by all local authorities by 2006 under the provisions of the new *Local Government Act of 2002*, and the Auckland regional growth strategy still remains to be clarified. It is likely that the *regional growth strategy* will sit under the umbrella of the LTCCP for the Auckland region, as may the reviewed *regional land transport strategy* and possibly other regional strategies for affordable housing, open space, coastal management and recreation.

9. Toward a Strategy for Urban Growth Management in Michigan

9.1 Introduction

Today, land use planners in Michigan have to deal with a world completely different from the one in which many of the basic planning practices were established in the 1920s and '30s. Traditional planning approaches based on home rule ideology, economic development and permissive zoning practices seem less relevant now when so much more emphasis is placed on sustainable development and concerns about environmental impacts. Moreover, a growing number of citizens rightfully wish to have a voice in their communities' future and their quality of life. When problems and challenges change, policy objectives need to change along with the institutions that address these problems. This means changes in the role of state agencies and government units, and the planning process and practices.

9.2 Smart Growth Initiatives and Actions

Fortunately, in the smart growth movement, many new ideals for the American built environment are emerging, with a promise to mitigate the worst side effects of unbridled expansion and poor planning. Smart growth may be defined as urban development that addresses community vitality and needs and considers economic viability and environmental sustainability. It focuses the urban development debate on new ways of community development that promote long-term quality of life²⁹. New initiatives to combat urban sprawl are burgeoning.

Some practitioners observe that many successful regional reform models can be adapted to Michigan's conditions:

- Anti-sprawl policies range from Oregon's state-mandated urban growth boundaries to Maryland's smart growth policies that focus state infrastructure funds on established urban areas.
- By state law (e.g., Connecticut, Massachusetts and New Jersey) or local ordinance (e.g., Fairfax County, Va.) many communities are increasingly requiring the creation of mixed-income housing in new

developments to reverse economic segregation and halt urban decay.

- Pennsylvania's \$100 million, 10-year bond fund for purchasing agricultural development rights (enacted in 1987) was trumped in 1998 by New Jersey voter approval of almost \$1 billion for 10 years.
- In Maryland, Montgomery County's mixed-income housing policies have successfully integrated low- and moderate-income households into upscale neighborhoods by requiring private homebuilders to include 10,000 affordable housing units in new subdivisions.

Local communities should promote innovative planning approaches. Innovative concepts such as cluster zoning — where homes are put on smaller lots to preserve larger tracts of common recreational space or natural areas — are difficult to get accepted by local officials because of cumbersome review procedures and local resistance to change (Rusk, 1999).

Critics such as Sam Stanley (1999a) are cautious about the political acceptability in the Midwest — where home rule and low-density residential living are widely accepted — of constraints on development, state-mandated top-down growth controls and regional plans, such as in Portland, Ore. They argue that the current practice of limited control implies that local residents are unified toward a common goal and willingly accept limits on housing choice and mobility. Rising incomes are enabling more and more families to exercise choices over housing and community. This is deemed a natural evolution of the American city in an environment characterized by relatively abundant land. Stanley cautions that state and local policy-makers should be wary of attempts to impose controls on development when harnessing natural trends in real estate markets. He and other critics advocate greater reliance on economic instruments that harness the dynamism of the real estate market to achieve similar goals more appropriately and effectively.

It can be argued, however, that it is legitimate for local communities to regulate the land development process because the land market alone cannot deal satisfactorily with the environmental and social externalities that arise from unregulated growth. It is a well-known fact that relying on the market is effective only if all costs — including the social cost or externalities such as environmental impacts, critical loss of open space and amenity functions — are truly reflected in the market price.

9.3 Scope of a Growth Management Strategy for Michigan

A growth management strategy based on the smart growth tenets may be beginning to take form in Michigan. The Michigan Land Use Leadership Council, established in 2003 by Gov. Jennifer Granholm, brought together leaders and stakeholders from around the state to address issues of urban revitalization, land resource-based industries, planning and development regulation, and infrastructure and community services. In its report, *Michigan's Land, Michigan's Future*, the council made more than 160 recommendations strongly based on smart growth tenets. The council's vision regarding growth management is to “. . . provide new tools, alternative planning approaches, offer technical assistance, and resources for local government to reduce sprawl and encourage intergovernmental and interagency cooperation . . . for large geographic areas.”

According to David Rusk (1999), who has served as a consultant on urban management to several communities and statewide organizations in Michigan, many Michigan organizations are committed to “change the rules of the game” in Lansing. The Farm Bureau and the Urban Mayors Association are forging a political partnership to address urban issues. Church-based groups such as those in Detroit are bridging racial and city-suburban divisions. Business groups and foundations are supporting regional reform initiatives.

Regional land use planning is an old concept, but it has recently been redefined as an essential element of growth management. In contrast to zoning, which may be passive and static, growth management is proactive and dynamic. Zoning — in its build out analysis — may define the desired fully realized urbanization process, but growth management seeks to maintain an equilibrium between development and conservation, between various forms of development and the concurrent provision of infrastructure, between the demands for public services generated by growth and the supply of revenue to finance those demands, between progress and equity.

The goal of urban growth management is to promote sustainable urban development. Urban sustainability involves the achievement of urban development aspirations, subject to the condition that natural and

man-made resources are not depleted or degraded so that future productive capacity is jeopardized. If Michigan makes the political choices to adopt this goal, then an urban growth management strategy should be developed to serve the economy, the community and the environment in an integrated way. It should seek to achieve simultaneously:

- **Sustainable and healthy communities** — Provide families with a clean environment by balancing development and its impacts with deliberate environmental protection safeguards. This means accommodating growth over time while preserving open space functions and values — such as prime agricultural land, wetlands and critical habitat — reusing land, and protecting water supplies and environmental quality.
- **Viable economic development and job security** — Create deliberate opportunities for business retention, expansion and attraction, provide tax revenue security by improvements in the local tax base matched with state tax revenue as an incentive to implement a proactive growth strategy, and maintain and improve community and neighborhood services and amenities. Mixed multiple-story uses that combine commercial, service and recreational functions, provide urban vitality and land use efficiency.
- **Diverse and vital neighborhoods** — Provide a mix of land uses (especially the integration of residential, educational, retailing and recreational functions) and a range of housing options to assure housing choices. Provide a diverse economic base, a sustained mix of transportation options, and quality schools and infrastructural services. Promote strong community organizations and identity.

Guided by recent experiences of other progressive states and the Netherlands and New Zealand case studies, a statewide urban growth management strategy for Michigan should recognize the many benefits of growth and opportunity for choice of residential lifestyles expected in a diverse, plural society. But it should also support restoring communities and the vitality of center cities and older suburbs, including in-fill development and brownfield redevelopment. The leading paradigm must be to accommodate “new functions in old buildings” by urban preservation and restoration efforts that create long-term use efficiency in the reutilization of the existing urban infrastructure.

Growth in new greenfield developments should be more town-centered, should be urban-transit and pedestrian-oriented, with a mix of housing, commercial and retail uses. It should also preserve open space, ecologically sensitive areas and environmental amenities.

State and local government policies should encourage compact growth and remove constraints to it. This means utilizing land at the suburban fringe more efficiently and encouraging the reuse of land and other development opportunities in already developed areas. It does not mean stopping growth at the fringe, but doing it at density levels that reduce further sprawl.

Development at the metropolitan fringe should be required to pay the full marginal cost of development. Imposing such *real* costs on new development would discourage sprawl. This can be accomplished by a differential utility and tax rate structure that charges the *real cost of expansion* to the primary beneficiaries of new development. This would not only discourage sprawl but help to redevelop and revitalize existing neighborhoods.

In fact, failing to levy the full marginal cost gives leapfrog development an unfair competitive advantage over projects in existing urban areas, where transactions are sometimes more difficult and expensive because of environmental remediation requirements. The very innovative law in Michigan pertaining to brownfield redevelopment and the associated environmental liability protection provide an excellent start in urban revitalization. Expanding environmental audits to include wetlands, biodiversity considerations and endangered species inventories would also discourage sprawl by including the full assessment of environmental cost in private real estate transactions.

Above all, a deliberate and effective state urban growth policy should encourage more efficient use of already developed land. Older urban and suburban neighborhoods should be revitalized and transformed into good places to live and do business, without displacing low-income residents. Older neighborhoods should be maintained and improved so they are again desirable places to live and work. Better school systems, job training and access to capital for small businesses are prerequisites. These efforts require a combination of government policy initiatives, active business investment, and special efforts by individuals and community groups.

Attracting jobs is absolutely critical. State and local governments should adopt *collaborative* economic land use and transportation policies — to be defined in regional development plans — that reinforce investments in priority urban areas and older neighborhoods. Incentives must be developed for job-creating businesses, homebuyers and others willing to invest in these neighborhoods. In developing these regional plans, it is critical to address in economic development strategies the notion of comparative advantage based on differential cost, production capacity and environmental consideration. This comparative analysis should be the guiding framework in prioritizing development initiatives and prevent communities from being “played against each other” by specific business ventures seeking local tax rebates that actually translate into community subsidies and reduced support for local services.

To assist in this process, older urban communities need to make their neighborhoods attractive to business interests and housing investments. City councils and community groups should redouble their efforts to improve the quality of urban life in small ways — for example, by improving neighborhood schools, forming community-based crime prevention groups and supporting local community development efforts. For instance, a group called “Community Builders” started as a civic neighborhood organization in 1997 and evolved into a consulting firm with revitalization activities in many major cities. It is a mission-driven 501(c)(3) organization focused on building and sustaining strong communities. It focuses now on developing large-scale projects that anchor comprehensive neighborhood revitalization efforts and expand community capacity to challenge concentrated poverty in and around large public housing projects. This is done in part through the Housing and Urban Development's (HUD) HOPE VI program in expanding public housing transformation.

To preserve community vitality and sustainability of civic functions, home ownership at all income levels needs to be encouraged. At the same time, public policy should support methods of keeping low-income citizens from displacement through development of affordable housing (both home ownership and rental) and the provision of quality services. Also, if developers provide quality housing in existing neighborhoods, they may need community incentives and legal protection.

More certainty is needed to delineate the direction, in shape and form, of anticipated future urban development in Michigan. To pursue the most cost-effective, economically viable and environmentally acceptable development, it is important to develop a strong collaboration of state, regional and local authorities with the development community. The purpose of collaboration should be to provide clear guidelines, priorities and certainties for the development and revitalization of urban and rural fringe areas together with commitments to preserve ecologically important habitats and conserve prime agricultural land and other open space. This collaborative work — spatially identified in regional and local land use plans — can provide much greater certainty to both those who want to develop their property and those who want to protect the natural environment. This could also include a broader use of mitigation opportunities to facilitate market-based compensation to landowners who choose to help protect ecologically sensitive and agriculturally valuable land.

State government policies can harness technological change to combat sprawl rather than encourage it. In the past, technological advancements (such as automobiles and government-sponsored freeways) have supported sprawl, requiring expensive after-the-fact government action of questionable value (such as ride-sharing requirements and *subsidized* construction of shopping malls). Today we stand at the threshold of a new technological era that offers the opportunity to do more work at home and in local communities. We must take advantage of the opportunities presented by the information superhighway to improve our land use choices.

The telecommunications revolution also holds the potential for reviving economically troubled areas. Because of its locational flexibility, telecommunications can provide new job prospects for older urban neighborhoods and for rural towns. In addition, remote job access and performance make it possible to reduce the office space requirements per employee, providing greater economic viability to renovated office buildings and retail facilities (via Web-based transactions) and expand their economic life. Both government policy and private business practice should encourage the use of telecommunications to reinforce existing communities rather than undermine their economic vitality.

9.4 Developing a Political Constituency for Growth Management in Michigan

As we have argued before, actions of a wide range of stakeholders, including community groups, government agencies, business corporations and individual households, have implications for urban sustainability. Nevertheless, it is manifestly clear that much of the *leadership* for providing better integration of social, economic and environmental values into the urban development process in Michigan must come primarily from the state, local governments and regional agencies working together, with the assistance of the federal government.

The significant role of the private corporate sector, community groups and other NGOs in this partnership model should not be underestimated, however. In a plural society with diverse values, it is imperative that they are all consulted as the primary stakeholders. For instance, real estate developers and their lenders know that certainty of official planning approval and availability of infrastructure, rather than speculative unplanned leapfrogging, will reduce costs and minimize administrative overhead. Thus, new real estate developments can be brought to market more quickly and cheaply within areas where plans for future development have been negotiated on the basis of community-based consensus.

Michigan government leaders arguably have the most important role to play in shaping the direction of urban development. The decisions they make in this decade will have a significant bearing on Michigan's medium and long-term development. To build a vibrant economy and retain a good quality of life for the 21st century, Michigan must move beyond sprawl to a new vision of community development. The status quo is not acceptable to a growing sector of society, which wants a bigger voice in deciding the future of their communities and demands proactive and informed leadership by state and local government officials.

Disappointingly, a major conclusion in our review is that at present, Michigan lacks the institutional capability and legislative commitment to take on this challenge effectively and provide leadership in urban growth management. The state and local government institutional arrangements for urban growth management were established in the 1920s and '30s

and have not been able to adapt to the task of managing the growing complexities of Michigan's settlements. State institutions, governed by a strong development-oriented ethos, have so far lacked a strong land use planning and integrated environmental management commitment. The limited role of local government is characterized by fragmented and overlapping jurisdictions and compromising land use legislation, based on home rule ideology and zoning. In a multinational sense, it seems also out of congruence with the *stewardship thrust* of the global discourse on sustainable development and the intent of some useful Agenda 21 prescriptions.³⁰

Michigan state government should develop a state-wide urban growth management strategy that is attuned to the imperatives of sustainable development and Agenda 21. Even if local governments in Michigan had the explicit legislative authority to plan and manage growth, they will do so effectively only with a clear state mandate. Currently, many local government politicians and their influential constituents do not fully appreciate the consequences of sprawl compared with other issues that demand their attention.

Critics of government-initiated growth management argue that state and local policy-makers should not impose controls on development and should instead rely on harnessing "natural" trends in real estate markets to mitigate the environmental impacts of sprawl. Unfortunately, such a stance, motivated by ideology rather than informed analysis and common sense, is out of kilter with the rapidly changing settlement geography in Michigan and the wide-ranging social, economic and environmental implications of the contemporary mode of growth. Such a limited and short-range perspective is also out of congruence with the views of many other writers on urban growth management referred to earlier (e.g., Daniels, 1999, Haughton and Hunter, 1994).

The most effective way to develop policy advice is to build a broad-based constituency in Michigan that includes community organizations, business leaders, farmer organizations, government leaders, environmentalists and others. This coalition should seek diverse inputs on preferred policy options and non-regulatory and regulatory means and compel state government to define a desirable urban growth management strategy and action agenda.

9.5 Legislative and Institutional Reforms

Wide-ranging changes in state and local government institutional arrangements, statutes, policies and practices are needed to translate the above suggestions into practice. On the basis of the findings of this preliminary study, we describe in broad outline the scope and direction of appropriate changes. A more in-depth analysis than has been possible in this study is needed before specific decisions are made on appropriate legislative and institutional reforms.

A statewide urban growth management strategy for Michigan should be anchored in a sustainable development plan for the state. The goal of sustainable development is based on integration of social, economic and ecological values in decisions about the allocation and management of natural, human and capital resources. It emphasizes the imperative of balancing intragenerational and intergenerational equity by ensuring that development does not exceed environmental carrying capacity, while maintaining the best productive use of our natural resource endowment — Michigan's natural capital.

Set within the broader institutional context of a sustainable development plan, a statewide urban growth strategy for Michigan would encompass the following:

- *Develop procedures to achieve a better horizontal integration among state government agencies* to ensure adequate consideration of social, economic and environmental values, and ensure that their policy priorities and activities reflect urban and rural sustainability objectives.
- *Identify a lead agency for urban growth management within state government* and identify clear roles and responsibilities with collaborating agencies and government units.
- *Build a broad-based constituency and advisory board to the lead government agency* that is committed to combat sprawl and includes representatives from community organizations, environmental and business organizations, the farming community, government leaders, the scientific community and others.

- *Develop procedures to improve the coordination of state government agencies, regional government entities such as the COGs or others to be established, regional planning entities and local governments to ensure sound policy integration.* This will create synergy in the way their activities can collectively promote urban sustainability objectives. For example, state and local permitting should be coordinated and streamlined. This is critical to encouraging development in urban and older suburban areas.
- *Conduct a state government review of the existing framework of local government structure and its functions.* Local government should have the legislative mandate to respond to community needs efficiently and effectively. It should provide a representative and accountable forum in which the region's citizens and communities can debate their common futures and choose alternative courses of action. The vast majority of Michiganders choose to locate in large metropolitan areas, but most of these people live in small, politically independent suburban jurisdictions. Local governments must work together toward a consistent set of land use policies — such as discouraging development on the metropolitan fringe and reinforcing investments in urban revitalization and public transit systems — that will enhance economic opportunity and quality of life across the entire metropolitan area. It would be beneficial that such initiatives include a promotion of the *compact city model* with sustained conditions and services that reverse urban decay and improve overall quality of life within the metropolitan areas. Such a wide-ranging review of Michigan local government structure and functions should include an examination of whether directly elected strong regional governance entities at a metropolitan (multicounty) level, with direct control over all regional transit, sewerage, economic development and land use planning functions, would be beneficial. A possible alternative to radical local government reform is to empower regional councils of governments or planning commissions to require local governments to work together.
- *Conduct a review of state and local government financing to reduce tax revenue competition (including abatements) and promote tax equity among local governments for economic development land uses, such as retail centers, office centers or new manufacturing facilities.* This could be achieved through the sharing of local real estate tax revenues. Tax equity allows

older suburbs and newer cities to compete with more equal tax rates and services. It also reduces the competition for tax base enhancement between jurisdictions, which often leads to sprawl and the abuse of local tax abatements. Finally, tax equity makes strategic land use planning on a regional level more feasible. Locally shared tax revenues could also be used to fund urban revitalization projects, brownfield redevelopment and the development of a regional park system. In combination, state income, sales and property tax revenues could be used to promote regional economic development that is economically viable, environmentally sustainable and socially acceptable within the context of a state land use planning framework. Finally, tax rate equity makes land use planning on a regional level more feasible.

For example, in the Twin Cities region in Minnesota, every city contributes 40 percent of its business tax base to a shared pool. The resources are distributed so that the majority of the region's homeowners receive both lower taxes and improved services. In addition, some part of this shared pool is set aside to clean up old industrial sites, rehabilitate degraded housing, and reinvest in important urban and inner-suburban amenities such as parks and cultural centers. In the Twin Cities, the shared tax base allows significant brownfields programs and the development of regional greenways and parks.

- *Conduct a review of land use planning legislation and stimulate enactment of appropriate planning legislation to empower local government to undertake strategic land use planning at the regional level and structure planning at the local level as a context for local zoning and related ordinances.* Such a statutory procedural planning framework will create the desired certainty in determining where new development should and should not occur and send the right economic signals to investors. It would enable local government to promote more efficient use of land that has already been developed, including a strong focus on job creation and housing in established urban areas and planned development in the suburbs, and encourage the reuse of land and other development opportunities in already developed and brownfield areas.
- *Ensure equitable cost sharing of new urban and infrastructural development.* Local government planning legislation should also empower local government to ensure that the full costs (and

benefits) of development are borne by the primary beneficiaries. Local governments often subsidize new developments, failing to price new infrastructure and related public services at their full costs (e.g., by failing to charge new developments for the full capital cost of tapping into existing systems, by extending infrastructure at no cost to new developments or by subsidizing current operating costs through general funds).

- *Explore new tools and techniques to guide development effectively.* Local government planning legislation should also empower local government to use planning tools such as urban growth (service) boundaries to progressively identify future development locations and service densities. It may include a review and offer innovative concepts such as cluster zoning that are, at present, difficult to get through local planning approval because of cumbersome review procedures and local resistance to change.
- *Promote affordable housing and equitable local cost sharing.* It is important to provide affordable housing that meets the basic needs of citizens while at the same time promote homeownership and equitable sharing of the tax burden to provide for local services such as schools and fire and police protection. For instance, the current practice of levying a property tax of only \$36 per year on so-called mobile homes — mostly built on semi-permanent foundations connected to utilities, including sewerage services — poses a disproportional burden on local communities that are required to provide educational services for those families even though they do not support those services through local property tax. Recent discussion in the legislature may progressively raise this rate to over \$100 per year, which still must be considered quite inequitable, giving the cost of local education and the existing state funding formula.
- *Develop strong and effective regional governance.* Ultimately, there needs to be a representative and accountable forum in which the region's citizens and communities can debate their common futures. This includes the need to establish a directly elected and strong regional governance entity at a metropolitan level with control over all essential regional functions such as public transit, emergency services, civil protection, education, recreation, health care, water and sewerage services, land use planning and economic development.

- *Use a combination of local and state tax revenues to reinvest (cost-shared, where appropriate, with private investors) in the central city districts and improve its economic vitality, development potential and quality of urban life — specifically, its schools, services, housing options, safety, transportation, and park and recreational opportunities.* As pointed out above, the demand for extra urban growth can be reduced by creating an effective intraurban supply of residential use mixed with job opportunities in retailing, the service sector and the light industrial sector.
- *Provide education and training to public officials and the general public about their critical role in promoting wise and sustainable land use decisions that help to maximize beneficial aspects while minimizing adverse impacts.* Specifically, the role and prerequisite skill sets should be emphasized that will assist elected officials, their professional staffs and citizens to play effective and participatory roles in public decision making and conflict resolution.
- *Promote change from a consumptive use to a stewardship-based land use ethic.* Build awareness that human land use impacts on our land and water resources are significant and cumulative, not only affecting environmental quality but potentially posing a long-term threat to human health and welfare. Environmental pollution is caused not only by industrial point sources and solid waste landfills but also by agricultural non-point sources associated with imprudent farm management practices, by extensive residential settlements relying on private wells and septic disposal systems, by overfertilization and pesticide treatments of lawns, golf courses, public roadways, etc.

Other recommendations include expanding the role of local governments in proactively shaping the pattern, type and density of development. This may be accomplished by:

- *Developing detailed local zoning regulations —* by means of a 10-year structure plan that determines the preferred local development future — the lot size, type, density and pattern of housing, and other land use developments.
- *Define — in parallel with the local structure plan — five-year growth priorities and locations for physical and service infrastructure development* such as roads, sewers, parks and schools by means of a specific *land use (allocation) plan*.

- *Develop educational and other public service facility siting standards that provide for the spatial integration of service provision together with existing communities.*
- *Develop effective and cost-saving utility distribution networks for water, electricity, sewer, phone, mail delivery and optical cable service that reflect efficiencies associated with clustered development.*
- *Develop housing standards and codes that encourage preservation and rehabilitation.*
- *Develop and implement environmental regulations that seek not only to prevent pollution but also to assist in remediation and in resolving legal liability issues.*
- *Develop equitable tax laws for residential land use — including private and public housing and mobile home parks — that promote equitable cost sharing in and distribution of all public services.*
- *Promote lending practices that do not penalize mixed-use development.*

9.6 The Development of a Strategic State Planning Framework

To maximize the long-term benefits derived from our land and water resources, their sustained use potential and diverse regional resource endowments, it is important to determine the comparative advantage of regions by economic sector. For instance, one of the basic questions that can be asked is, which regions and locations are best endowed to maintain a viable agricultural sector, expand tourism and recreational opportunities, or sustain a harvest rate of forest resources to provide the raw material for value-added processing or manufacturing? Ideally, this long-term planning perspective on economic development and land use allocation is best accomplished at the national level. However, under a federal system in which states exercise some independent taxation and a high degree of regulatory land use controls, reality mandates that, in the United States, this is done at the state level.

This process involves the comparative identification of the best economic potential and growth prospects by regions (as aggregate local potentials) within a state, linked to land use plans that seek to accomplish these public goals through land allocation on the basis of resource endowment, comparative economic production opportunities, environmental risk and impact considerations, existing infrastructure, public preferences and anticipated socioeconomic benefits.

This could be viewed as state land use strategy with an emphasis on an *economic development plan* that identifies the comparative advantage of regions to sustain viable enterprise activities in agriculture, forestry, manufacturing, tourism and recreation and other economic sectors and subsectors. This *state land use plan* could be developed by a state agency with an oversight board composed of elected officials serving five-year terms. The plan would be subject to public review and revised every 10 years on the basis of revised public priorities.

As such, it would outline regional preferences (spatially defined land use plans and suitability maps) where these economic activities could be pursued most successfully with the least environmental impact and public risk. Implementation may be accomplished by seeking private investments, potentially coupled with government investments and incentives, on the basis of preferred land allocations at the regional level. These regional plans must be further refined at the local level by the development of detailed land use plans supported by effective land use controls. The implementation of these land use plans should be based on a sound regulatory framework coupled with public investments and incentives such as cost sharing in investments and tax rebates to stimulate private investments and induce new employment and income opportunities.

In this context, an important policy initiative could be to promote the merger of central cities with their immediately adjacent townships or municipalities to form *regional planning districts*. These entities would typically comprise multicounty units of government with the responsibility to develop a regional *land use structure plan*, subject to five-year revisions. To encourage this process, a gradual reduction of local property taxes could be implemented, offset by a matching increase in state income and sales taxes. The additional state revenue could then be used to provide annual operating grants to local units of government that form these *planning districts* or administrative *growth alliances* and commit to comprehensive land use planning programs that seek to actively deter open space development by means of wetland, farmland and woodland protection ordinances, coupled with rational growth strategies. Such a program could be further augmented by the introduction of a statewide growth strategy as part of a state *economic development plan* that identifies priority (investment) areas for

agriculture, specialty crops, tourism and recreation, specific manufacturing, service industries, commercial and retailing functions, and nature conservation. These public priorities would be pursued by means of tax and other fiscal incentives and other non-regulatory means. Such a planning framework could be implemented into a four-tiered land use planning structure — an example of which is provided below, along with a general outline of the various administrative unit responsibilities (Table 8).

The framework would seek to identify long-term statewide growth priorities, progressively refined by means of spatial land use allocations at the state, regional (multicounty) and local growth alliance (major and minor cities with adjacent townships) levels. It would constitute an economic planning framework based on local implementation and control while reinforcing statewide growth and resource conservation priorities spelled out in comprehensive land use plans.

Table 8. Functional hierarchy of a strategic and statewide planning framework.

Government entity	Planning emphasis	Administrative level	Focus
State government	<i>Economic development plan</i> — as part of a <i>state land use plan</i> with regional emphasis (detailed at economic sector and county level)	State	Broad growth policy guidelines with sectoral and regional priorities combined with local funding and other implementation incentives
Multicounty regions	<i>Regional structure plan</i> — Spatial outline of growth plan (detail of general land uses at the multisection 1-mile grid level)	Economic Development Administration districts or other multicounty regions (COGs or regional planning districts)	Refinement of state economic growth and planning policy — Stimulate business expansion, attraction and retention — especially in priority areas, including urban revitalization programs
Growth alliances	<i>Local structure plan</i> — Local priorities and <i>spatial development plan</i> (detail land use types at the 1-square-mile or subsection level — as current zoning)	Central city with adjacent jurisdictions (municipalities and adjacent townships forming growth alliance)	Growth policy emphasis, guidelines and regional ordinances
City or township	Detailed land use and zoning plan (detailed parcel level)	City, municipality or township	Binding maps with growth and service boundaries combined with ordinances

Key words: land use policy, planning, growth management, sprawl, population growth, growth balance, economic development, regional planning, sustainable development.

References

- Abbing, H., and R. Peeten. 2003. Growth Management. Master's thesis, Wageningen University.
- Americana Foundation. 1992. Symposium Proceedings. Managing Growth — New Directions Toward Integrated Land Use Planning. Novi, Mich.: Americana Foundation.
- American Planning Association. 1999. Planning communities for the 21st century. A special report of the APA's Growing Smart Project. Washington, D.C.: APA.
- Brown, L., and B. Halweil. 1998. China's Water Shortage Could Shake World Food Security — Part 2. World Watch magazine, July/August.
- Centre for Environment and Planning. 2000. A Comparison of Environmental Planning Systems Legislation in Selected Countries. (A background paper for the Royal Commission on Environmental Pollution study on environmental planning.) Bristol, U.K: Faculty of the Built Environment.
- Cwikel, W. 1992. *Michigan Wetlands: Yours to Protect*. Conway, Mich.: Tip of the Mitt Watershed Council.
- Daniels, T. 1999. When City and Countryside Collide — Managing Growth in the Metropolitan Fringe. Washington, D.C.: Island Press.
- Environmental Protection Agency (EPA). 1993. *Costs of Providing Government Services to Alternative Residential Patterns*. Report prepared for the Chesapeake Bay Program's Subcommittee on Population Growth and Development. Washington, D.C.: U.S. EPA.
- Ewing, R. 1994. Characteristics, Causes, and Effects of Sprawl: A Literature Review. Pages 1-15 in *Environmental and Urban Issues*. FAU/FIU Joint Center.
- Farm Foundation. 1985. Transfer of land rights. *Proceedings of a Workshop on the Transfer of Rural Lands*. Madison, Wis.: University of Wisconsin.
- Forester, J. 1971. *World Dynamics*. Cambridge, Mass.: Wright-Allen Press.
- Frey Foundation. 1997. Today's winners — tomorrow's losers. How urban, suburban and rural areas of Greater Grand Rapids are being threatened by urban sprawl. Summary of a workshop sponsored by the Frey Foundation, April 1997, Grand Rapids, Mich.
- Goldman, Benjamin A. 1995. Sustainable America: New Public Policy for the 21st Century. Washington, D.C.: U.S. Department of Commerce, Economic Development Administration.
- Grenspace Alliance. Undated. *Toward a Green Space Legacy: A Call to Action in Southeastern Pennsylvania*. Philadelphia: Pennsylvania Environmental Council.
- Haughton, G. and C. Hunter. 1994. Sustainable Cities. London: Jessica Kingsley Publishers and Regional Studies Association.
- Held and Visser. 1984. Rural land uses and planning: A comparative study of the Netherlands and the United States. Amsterdam: Elsevier.
- Hotaling, R., and G.V. Moffat. 1986. Michigan Townships Planning and Zoning Book. Community Development Programs. East Lansing, Mich.: Michigan State University.
- Kusler, J. A. 1980. *Regulating sensitive lands*. Washington, D.C.: Environmental Law Institute.
- Kusler, J. A. 1983. *Our national wetland heritage: a protection guidebook*. Washington, D.C.: Environmental Law Institute.
- Meadows, H., et al. 1972. *The Limits to Growth — The Club of Rome Report*. New York: Universe Books.
- Michigan Office of Intergovernmental Relations. 1979. Cited in Held and Visser, Rural land uses and planning: A comparative study of the Netherlands and the United States. Amsterdam: Elsevier.
- Michigan Planning & Zoning Center, Inc., and the Land Information Access Center. 1999. *Local Tools and Techniques to Achieve Smart Growth*. Lansing, Mich.
- Michigan Society of Planning Officials. 1995. *Institutional Structure for Land Use Decision Making in Michigan*. Rochester, Mich.: Michigan Society of Planning Officials.
- Mitsch, W.J., and J.G. Gosselink. 1986. *Wetlands*. New York: Van Nostrand Reinhold Co.
- Mitsch, W.J., and J. G. Gosselink. 1993. *Wetlands* (2nd edition). New York: Van Nostrand Reinhold Co.
- Mitsch, W.J. 1994. *Global Wetlands: Old World and New*. Amsterdam: Elsevier.
- Newman, R.G., and J.R. Kenworthy. 1989. *Cities and Automobile Dependence: A Sourcebook*. Aldershot, England: Gower Technical.
- Olson, M., and H.H. Landsberg. 1973. *The No-Growth Society*. New York: Norton.
- Phelps, E. S. (ed.). 1962. *The Goal of Economic Growth*. New York: Norton.

- Pimentel, D. 1991. Land, Energy and Water: The Constraints Governing Ideal U.S. Population Size. Teaneck, N.J.: Negative Population Growth, Inc., USA.
- Planning and Zoning Center, Inc., and the Land Information Access Center. 1999. *Local Tools and Techniques to Achieve Smart Growth*. Lansing, Mich.
- Reilly, W. K. 1996. Across the barricades. In D.C. Diamond, L. Henry, and P. F. Noonan (eds). Land use in America: The report of the Sustainable Use of Land Project. Washington, D.C.: Island Press, Lincoln Institute of Land Policy.
- Rusk, D. 1996. Acting as One: A Presentation to the Michigan Legislature. *Notes, legislative workshop on land use issues*.
- Rusk, David. 1999. "Saving Farms by Saving Cities Sprawl, Race, and Concentration of Poverty." *Community News*, vol. 11, no. 1.
- Schultink, G., and R. van Vliet. 1997. Wetland Identification and Protection: North American and European Policy Perspectives. Research Report 554. East Lansing, Mich.: Agricultural Experiment Station, Michigan State University.
- Schultink, G., R. Moore, L. Wolfson and J. Dischinger-Smedes. 2000. Guidelines for Wetland Identification and Evaluation: Needs and Opportunities for Local Protection. Research Report 572. East Lansing, Mich.: Agricultural Experiment Station, Michigan State University.
- Schultink, G. 2001. Comparative Environmental Policy and Risk Assessment: Implications for Risk Communication, International Conflict Resolution and National Security. Pages 95-111 in: E. Petzold-Bradley et al. (eds.), *Responding to Environmental Conflicts: Implications for Theory and Practice*. NATO Science Series #2 Environmental Security, Vol. 78. Dordrecht, The Netherlands: Kluwer Publishers.
- Skole, D., S. Batzli, S. Gage, B. Pijanowski, W. Chomentowski and W. Rustem, 2002. Forecast Michigan: Tracking Change for Land Use Planning and Policymaking. Pages 83-112 in D. Thornton and C. Weissert (eds.), *Urban Policy Choices for Michigan Leaders*. East Lansing, Mich.: MSU Press.
- Southeast Michigan Council of Governments (SEMCOG). 1991. The Problem of Urban Sprawl. *Planning and Zoning News*, vol. 10, (November 1991), pp. 5-10.
- Stanley, S. 1999a. Urban Sprawl in Michigan and Beyond: Much Ado about Nothing? *Community News*, Vol. 11, No. 1, pp.1 - 4.
- Stanley, S. 1999b. Urban Sprawl and the Michigan Landscape: A Market Oriented Approach. Midland, Mich.: The Mackinac Center for Public Policy.
- Szymecko, L.A., and T.C. Voice. 2002. *Brownfield Redevelopment Guidebook for Michigan*. Great Lakes and Mid-Atlantic Hazardous Substances Research Center, Michigan State University. Brownfield News.
- Taylor, G., and C. Weissert. 2002. Are We Supporting Sprawl Through Aid to High-Growth Communities?: Revisiting the 1998 State Revenue Sharing Formula Changes. Pages 159-218 in D. Thornton and C. Weissert (eds.), *Urban Policy Choices for Michigan Leaders*. East Lansing, Mich.: MSU Press.
- Thorpe S., et al. 1996. *Impacts of Changing Land Use*. Great Lakes Commission, Ann Arbor.
- U.S. Bureau of the Census. 1988 and 1994. *City and County Data Book*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Office of Technology Assessment. 1995. "Uneven Development: Outer Suburbs and Exurbs" in *The Technological Reshaping of Metropolitan America*. OTA-ETI-643. Washington, D.C.: U. S. Government Printing Office.
- VerBurg, K. 1997. Guide to Michigan County Government. East Lansing, Mich.: Department of Resource Development, Michigan State University.
- VerBurg, K. 1990. *Managing the Modern Michigan Township (2nd edition)*. East Lansing, Mich.: Department of Resource Development, Michigan State University.
- Verburg, K., 2002. *Managing the Modern Michigan Township (3rd edition)*. East Lansing, Mich.: Michigan State University.
- Vermeulen, J., et al. 1997. The 1000 Friends Report: Can Michigan benefit from a Statewide Growth Management Organization? Traverse City, Mich.: The Land Information Access Association.
- Winoto, J., and G. Schultink. 1996. *Impacts of Urbanization on Agricultural Sustainability and Rural Life in West Java, Indonesia*. Research Report 545. East Lansing, Mich.: Agricultural Experiment Station, Michigan State University.

Footnotes

- 1 A trend that, according to *World Watch* data, seems to be substantiated by per capita global fish production since 1989, and that approaches the same decline for beef and grain production.
- 2 Vesterby, M., R.E. Heimlich and K.S. Krupa. 1994. Urbanization of Rural Land in the United States. USDA-ERS Agricultural Economic Report 673.
- 3 EPA, 1996. National Water Quality Inventory. Report to Congress.
- 4 <http://www.cityofreno.com/gov/news/1049928994.php>.
- 5 U.S. DOT. 1997. Our Nation's Travel: 1995 NPTS Early Results Report.
- 6 http://www.epa.gov/smartgrowth/about_sg.htm.
- 7 <http://www.pscinc.com/Documents/lbilu/pressrelease.htm>.
- 8 Michigan Department of Natural Resources (MDNR). 2001. Commercial Forest Program. Available at: www.dnr.state.mi.us.
- 9 Rusk, D., in presentation on urban sprawl and land use issues at Michigan State University, November 21, 1998.
- 10 www.glc.org/docs/subject.html?sc=lu.
- 11 Reported in *Great Lakes Bulletin — Issue 12, August 2000*.
- 12 <http://www.nass.usda.gov/census/>
- 13 www.michiganlanduse.org/resources/councilresources/Land_Use_Trends.pdf (Status report prepared by Public Sector Consultants for the Michigan Land Use Leadership Council).
- 14 <http://www.liaa.org/homepage3966328.asp>
- 15 <http://closup.umich.edu/research/projects/michatmill/michatmill-toc.html>.
- 16 As part of the Bill of Rights, the “just compensation clause” is lodged in the Fifth Amendment protecting property owners against uncompensated government seizure of property for the public good. It states that “private property shall not be taken for public use, without just compensation.”
- 17 Extra phrase of the Township Rural Zoning Act of 1943.
- 18 See Washtenaw County, Michigan, Agricultural Land and Open Space Task Force.
- 19 See Doyle Buckwater, “Dillon's Rule in the 1980s: Who is in Charge of legal Affairs?” National Civic Review. National Municipal League: New York.
- 20 See Peter M. Senge, *The Fifth Discipline: The Art & Practice of The Learning Organization* (New York: Currency Doubleday, 1990).
- 21 Michigan Office of Intergovernmental Relations, 1979, cited in Held and Visser, Rural land uses and planning: A comparative study of the Netherlands and the United States (Amsterdam; Elsevier, 1984), p. 199.
- 22 The Michigan House recently passed House bills 4995 and 5028-29 on land use/zoning. The bills require that a zoning ordinance be amended to allow developers to increase density of development on a parcel of land as long as an easement is secured that keeps a minimum percentage of the land in open space.
- 23 Decentralized unitary state means that governmental powers are divided among various bodies. The rights and duties are specified in the Constitution. At the same time these bodies of the unitary state should not pursue contradictory policies of higher government (European Commission, 1999).
- 24 Current discussions are taking place to replace the appointed function of local mayor (which is typically representative of the largest political party at the local level) with a directly elected mayor.
- 25 According to Elsevier magazine (2004), the Netherlands contributed a balance of 3 billion Euros in national tax revenues to the European Union to support development assistance to other member states or for other aspects of E.U. policy implementation. This is, on a per capita basis, the highest of all E.U. member states.
- 26 The States General (parliament) consists of two policy chambers: the Second Chamber of Parliament, which consists of 150 members, directly elected for four years; and the Senate, elected by members of the provincial authorities (European Commission, 1999).
- 27 The Resource Management Act of 1991 combined the Town and Country Planning Act of 1977 with several other environmental statutes.
- 28 The following review is based on information obtained from the Auckland Regional Growth Forum Web site (www.growthforum.govt.nz) and interviews with two senior staff members of the Auckland Regional Council. The authors are grateful for the assistance provided by the Auckland Regional Council.
- 29 See: <http://www.epa.gov/smartgrowth/>.
- 30 Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organizations of the United Nations, governments and major groups in every area in which human activity and development affect the environment.



The Michigan State University Agricultural Experiment Station is an equal opportunity employer and complies with Title VI of the Civil Rights Act of 1964 and Title IX of the Education Amendments of 1972.

New 5:05 - 2M - KMF - DP
