

***Sustainable Urban  
Development In Canada:  
From Concept To Practice***

***Volume II: Annotated Bibliography***



***by Virginia W. Maclaren***

**ICURR** Intergovernmental Committee on Urban  
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et régionales

**SUSTAINABLE URBAN DEVELOPMENT IN CANADA:  
FROM CONCEPT TO PRACTICE**

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**VOLUME II: ANNOTATED BIBLIOGRAPHY**

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August 1992

On behalf of the Intergovernmental Committee on Urban and Regional Research (ICURR), we are pleased to present this report entitled *Sustainable Urban Development in Canada: From Concept to Practice* by Dr. Virginia Maclaren. The issue of urban sustainable development is one that is at the core of the Committee's research program. It is also an area of significant interest to many of ICURR's sponsors and, in particular, to the Canada Mortgage and Housing Corporation. Given the increasing importance of urban areas in this country and the merging commitment of many public agencies to promote environmental awareness, the issue of how to make our urban environment more sustainable is of significant urgency.

Until now most of the focus in the field has been on the large scale environmental/physical dimension of the question. ICURR's interest and the reason for its support of Dr. Maclaren's project is to bring to the forefront the urban dimension and the necessity to equip local officials with tools to better understand what they can do and how they can do it. ICURR intends to pursue its involvement in the field for some time to come.

ICURR would like to express its gratitude to the **Canadian Environmental Assessment Research Council** and to its executive secretary Patrice Leblanc for the support given in making translation of the report into French possible. Without this assistance, such a task would have been beyond ICURR's resources.

We also want to sincerely thank Dr. Virginia Maclaren for her commitment to seeing this report completed.

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Dr. Maclaren is an Associate Professor in the Department of Geography and the Graduate Programme in Planning at the University of Toronto. She teaches courses in environmental planning, urban waste management and decision making methods. She is also the coordinator of the Programme in Planning's environmental planning specialization, one of the four specialization areas offered by the Programme.

Virginia Maclaren was educated at Bishop's University in Lennoxville, Québec, at the University of Ottawa and at Cornell University in Ithaca, New York. In addition to her research interest in sustainable urban development, she has been involved in a number of studies on waste management issues and co-edited two books on environmental assessment. She is a former chair of the Environmental Organization's Caucus for Metropolitan Toronto's Solid Waste Environmental Assessment Plan (SWEAP), former co-chair of the City of Toronto Recycling Action Committee and past member of the City of Toronto's Cityplan'91 Task Force.



## TABLE OF CONTENTS

Introduction.....	2
Sustainable development theory and conceptual frameworks.....	2
Sustainable cities.....	8
Sustainable development and environmental assessment.....	15
Green cities.....	17
Urban forestry.....	19
Alternative transportation.....	20
Decreasing reliance on the car.....	21
Energy conservation.....	22
Parkland naturalization.....	23
Healthy cities.....	23
Case studies.....	24



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## INTRODUCTION

The purpose of preparing this annotated bibliography was three-fold. The first objective was to determine the extent to which previous studies had documented the implementation of sustainable development policies and programs at the urban level. The second objective was to identify current definitions of sustainable development and sustainable urban development that could be used as guidelines for respondents in the questionnaire survey. The third objective was to find and present a few, selected theoretical and methodological references on different aspects of sustainable urban development.

The 43 references in the bibliography have been drawn from the literature published on sustainable development and sustainable urban development up to the year 1990. A small number of references from 1991 have also been included. The entries in the bibliography were located by means of an extensive search through 15 planning and environmental journals and a search of environmental and planning books in the University of Toronto Library and the ICURR Library. The bulk of the references deal with sustainable development theory in general and the application of sustainable development theory to urban areas. The coverage of specific aspects of sustainable urban development is not as comprehensive as coverage of the general theory topics because there are so many areas to cover, but it provides a sample of current research and planning initiatives. The final section of the bibliography contains case studies of cities which have implemented one or more sustainable development concepts.

## SUSTAINABLE DEVELOPMENT THEORY AND CONCEPTUAL FRAMEWORKS

Barbier, Edward B. (1987) "The Concept of Sustainable Development", *Environmental Conservation* 14(2): 101-110.

The focus of this paper is a discussion of the concept of sustainable development as applied to the Third World. However, much of the discussion is also relevant for developed countries. Sustainable economic development strategies must be ecologically sustainable over the long term, consistent with social values and institutions, and encourage "grassroots" participation in the development process. As the primary objective is to provide lasting and secure livelihoods that minimize resource depletion, environmental degradation, cultural disruption, and social instability, this process can be viewed as an interaction among three systems: the biological and resource system, the economic system, and the social system. The goals of the biological/resource system are genetic diversity, resilience, and biological productivity. The goals of the economic system are satisfying basic needs (reducing poverty), enhancing equity, and increasing useful goods and services. The goals in the social system are cultural diversity, institutional sustainability, social justice, and participation. The general objective is to maximize the goals across and within all of these systems through a process of tradeoffs which

recognizes that not all goals can be achieved simultaneously. The tradeoff process must be adaptive over time, and will vary by both geographical location and spatial scale. Examples of sustainability criteria applied to industry could include increased recycling, minimal use of non-renewable resources, exploiting renewable resources at a rate less than their natural rate of ecological regeneration, reducing waste generation levels to well within the assimilative capacity of the environment, and ensuring maximum resource-use efficiency within industrial processes. The paper concludes by investigating tools from economic planning concerned with deriving policy recommendations for environmental sustainability. These include social cost-benefit analysis, resource accounting, macroeconomic policy, and applied project-specific research.

Dovers, Stephen R. (1990) "Sustainability in Context: An Australian Perspective", *Environmental Management* 14 (3): 297-305.

Global overviews of the sustainability debate have identified the following major sustainability concerns: 1. resources are being used or degraded at such a rate as to significantly compromise their availability to future human generations; 2. humanity's wastes are accumulating to such an extent as to also severely compromise future use of the biosphere; 3. the earth's biological diversity is being reduced at an unacceptable rate, threatening both a significant proportion of nonhuman life and the future use of the biosphere by humans; 4. present societal arrangements and the existing models of growth and development create many goods, services, and situations that are not necessarily socially or humanly desirable; and 5. existing models of development are fundamentally inequitable, particularly between what are known as the developed and the developing worlds, but also within nation states. Dovers provides a checklist, collated from a number of different sources in the literature, of some of the attributes associated with a sustainable future: 1. significantly reduced rates of use of nonrenewable resources; 2. significantly increased reliance on sustainable rates of use of renewable resources; 3. significantly reduced rates of output of nonreusable, intractable, or ecologically damaging wastes; 4. stability, or resilience, in systems of natural resource management and utilization; 5. greater sensitivity to information describing the status of natural resources and the condition of humans, and a more active gathering of such information; 6. integration of ecological and social goals into economic and other policies and techniques; 7. greater concentration on the quality and durability content of goods and services, along with a decreased concentration upon the mass/resource content; and greater reuse of materials; and 8. devolution of power and increased self-reliance within smaller organizational units. Dovers contends that the concept of sustainable development is a value-based concern and a general social goal. It is the moral choice of accepting intergenerational equity as an overriding ethic. As a general goal or ethic, definition of the concept is inherently difficult. It becomes more clearly defined as it is translated into policy goals, policies, and specific actions. The concept cannot be defined in any absolute sense because there is no single "best" sustainable society but rather an infinite variety of more sustainable societies and systems within them, shaped by the

particular context of time, place and imperative. Imperative, in turn, will vary greatly in different countries, depending on the political system, the resource base, and the economic system. For example, a centrally-planned economy has different opportunities and constraints for achieving sustainability goals than a free-market system.

Norgaard, Richard B. (1988) "Sustainable Development: A Co-evolutionary View", *Futures* 20(6): 606-620.

Sustainable development does not imply that everything stays the same. It implies that the overall level of diversity and overall productivity of components and relations in systems are maintained or enhanced. It implies that existing traits are deliberately maintained as options until new ones have proven superior. The shift towards sustainable development entails adapting policies and strategies that sequentially reduce the likelihood that especially valuable traits will disappear prematurely. It also entails the fostering of diversity per se. This definition applies to belief systems, environmental systems, cultural systems, organizational systems, and knowledge systems equally well. In fact, the sustainability of components and relations in each subsystem depends on the interactions between them. Hence, sustainable development will entail a shift from a mechanical to a co-evolutionary understanding of systems. In environmental systems, the key issues that will have to be addressed in order to achieve sustainable development include the following: curbing the pace and disruption of global climatic change; switching from the use of stock resources to flow resources and reallocating the use of stock resources towards the future; reversing the accumulation of toxics in the environment; and slowing the loss of biological diversity.

Rees, William E. (1989) *Defining "Sustainable Development"* (Vancouver: University of British Columbia, Research Bulletin).

"Sustainable" describes any activity that can be carried on indefinitely, while "development" can refer to either a single activity or the entire pattern of socioeconomic activities. Rees defines sustainable development as positive socioeconomic change that does not undermine the ecological and social systems upon which communities and society are dependent. Its successful implementation requires integrated policy, planning, and social learning processes; its political viability depends on the full support of the people it affects through their governments, their social institutions, and their private activities. Additionally, it is oriented to achieving explicitly ecological, social, and economic objectives; it may impose ecological limits on material consumption, while fostering qualitative development at the community and individual levels; it requires government intervention, but also the cooperation of the private sector; it demands policy integration and coordination at all spatial scales and among relevant political jurisdictions; and it depends on educational, planning, and political processes that are open, informed, and fair. An overall goal for sustainable development should be to provide a secure and satisfying material future for everyone, in a society that is equitable, caring, and attentive to basic human needs. This

goal may not be achievable through revitalization of economic growth in both industrial and developing countries, as suggested in "Our Common Future," but rather may require limits on growth. Becoming a sustainable society implies living within our ecological means while restructuring the economy on a foundation of new environmentally benign technologies. Sustainable development places a priority on the need to maintain ecological diversity and productivity in developing regions. It favours increased community control over development decisions affecting local ecosystems and fosters increased regional self-reliance.

Rees, William E., Bailey, S., Colnett, D., Duffy, D., Hursin, T., Roseland, M., Sanford, D. (eds.)(1988) **Planning for Sustainable Development: A Resource Book** (Vancouver: University of British Columbia Centre for Human Settlements).

This book reports on the proceedings of a symposium that brought together politicians, representatives from public interest groups, bureaucrats and corporate executives to discuss different aspects of planning for sustainable development. Part I of the book contains the text from a keynote speech by Stephen Lewis and an overview paper on the challenge of sustainable development. Part II consists of workshop reports on the following topics: provincial strategies, economic opportunities, planning sustainable communities, agricultural resources, forest resources, fisheries and water resources, and non-renewable resources. Participants in the workshop on planning sustainable communities identified 12 characteristics of a sustainable community and discussed several substantive, procedural and institutional issues related to that definition. They also proposed a number of individual, community, provincial and global actions for creating sustainable communities. Their report concludes with a listing of 13 recommendations for achieving attitude change through education and six recommendations for achieving institutional change favourable for sustainable communities.

Simon, David (1989) "Sustainable Development: Theoretical Construct or Attainable Goal"?, **Environmental Conservation** 16(1): 41-48.

Simon reviews recent contributions to the literature on both the conceptual and empirical aspects of sustainable development. His review stresses the works of three authors: "Sustainable Development: Exploring the Contradictions" by Michael Redcliff, "Our Common Future" by the World Commission on Environment and Development(WCED), and "The Concept of Sustainable Development" by Edward Barbier. Simon is in essential agreement with the definitions of sustainable development provided by all three authors, but claims that a weakness found in the writings of both Barbier and WCED is their failure to suggest an enforceable mechanism for activating their agendas and for transforming national governments into more benign, altruistic entities capable of initiating sustainable development policies. In fact, most contributions to sustainable development to date have emphasized theoretical development rather than implementation of the concept. In

contrast with Redcliff's focus on "bottom-up" approaches for achieving sustainable development, Simon recommends approaches that combine a flexible blend of "bottom-up" and "top-down" planning. He concludes by suggesting how the assessment of sustainability at the level of individual agro-ecological systems might be advanced.

World Commission on Environment and Development (1987) **Our Common Future**. (Oxford: Oxford University Press).

The World Commission on Environment and Development (WCED) was established by the United Nations in 1983 and chaired by Gro Harlem Brundtland, Prime Minister of Norway. The mandate of the WCED was to formulate a global agenda for change and to propose environmental strategies for achieving sustainable development by the year 2000 and beyond. The final report from the Commission defines sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It envisages a new era of economic growth in which nations where the majority are poor would receive a fair share of the resources required to sustain growth. Policies that follow from the concept of sustainable development include: reviving growth; changing the quality of growth; meeting essential needs for jobs, food, energy, water, and sanitation; ensuring a sustainable level of education; conserving and enhancing the resource base; reorienting technology and managing risk; and merging environment and economics in decision making. Six key chapters in the report address the problems associated with population growth, food security, the loss of species and genetic resources, energy use, industrial output and urban settlements. The WCED notes that urban problems in the developing world have reached a critical stage while cities in the industrial world have advanced technology, stronger national economies and a developed institutional infrastructure that gives them resilience and the potential for continuing recovery from the problems of deteriorating infrastructure, environmental degradation, inner-city decay and neighbourhood collapse.

## SUSTAINABLE CITIES

Brown, Lester R. and Jacobson, Jodi L. (1987) **The Future of Urbanization: Facing the Ecological and Economic Constraints.** (Washington, D.C.: Worldwatch Institute, Worldwatch Paper No.77).

This paper combines an historical analysis of urbanization with a description of contrasts and similarities in patterns of urbanization found between developed and developing countries. The body of the paper expands on five constraints to continued urbanization. These are: urban energy needs, urban requirements for food, nutrient recycling, the ecological cost of urbanization, and the balance between urban and rural development. The amount of energy needed to support urban dwellers is increasing worldwide. Land use intensity, population size, and level of development determine the type and quantity of urban fuel needs. Since the rise in oil prices during the seventies, some cities have increased their reliance on renewable energy sources and others have attempted to increase the efficiency of use of current sources by means of district heating and cogeneration. A few cities, such as Davis, California, have adopted integrated energy planning to reduce waste in all sectors of the urban economy. Food scarcity is a more serious problem in developing countries, but in some developed countries, community gardens and farmers' markets have helped increase food self-sufficiency. The recycling of nutrients in human wastes avoids pollution from sewage disposal and acts as a substitute for chemical fertilizers used in agriculture. Three methods of recycling are: crop irrigation with sewage waste water, land application of treated sewage sludge, and sludge composting. The ecological costs of urbanization include water scarcity, pollution from automobiles and pollution from industry. Water supplies can be protected through higher prices and land conservation. Measures to reduce use of the automobile include traffic bans, taxes and financial incentives, redesigning roads for walking and cycling, and encouraging public transit. User taxes can reduce industrial pollution. In developing countries, the dominance of urban over rural areas has led to proliferating squatter settlements, external debts, and rising unemployment. To remedy this imbalance, more emphasis should be placed on market forces in economic development and investment transfers to the countryside should be encouraged for social services.

Button, Kenneth J. and Pearce, David W. (1989) "Improving the Urban Environment: How to Adjust National and Local Government Policy for Sustainable Urban Growth", **Progress in Planning** :137-184.

According to Button and Pearce, sustainability implies that urban development takes place subject to some acceptable objective of environmental quality being sustained. The first chapter of their paper presents characteristics associated with the decline of inner cities and describes the linkage between environmental quality and urban economic performance. The second chapter examines the nature of the major environmental problems encountered in urban areas and reviews the features of urban areas which

contribute to these problems. It emphasizes the problems created by market failures and government failures. The third chapter enumerates a range of economic policy instruments available to tackle environmental problems in urban areas. The first set of policy instruments reviewed are externality charges, including the polluter-pay principle, the user-pay principle, product charges, administrative charges, and tax differentiation. The second set of policy instruments examined includes direct and transfer-inducing subsidies. Additional policy instruments encompass emission controls and standards, physical land use planning, land taxation, infrastructure provision, and infrastructure restoration. The fourth chapter identifies six stages of urban development and suggests which policy tools are appropriate for each stage. The fifth chapter outlines approaches for evaluating policy instrument effectiveness. These include: benefit estimation or opinion poll indicators for measuring urban welfare changes; the use of monitoring procedures to measure the sensitivity of polluters to environmental quality charges; the adoption of high environmental quality standards and environmental accounting procedures as a means of integrating sustainability into urban planning; and monitoring of the social incidence of environmental quality changes.

Calthorpe, Peter (1986) "The Urban Context", In Sim Van der Ryn and Peter Calthorpe (eds.) **Sustainable Communities: A New Design Synthesis for Cities, Suburbs and Towns** (San Francisco: Sierra Club Books): 1-33.

In contrast to most European cities, American cities have not evolved in a balanced relationship with the land. There has been no sense of ecological limits linking the scale of feudal villages to local food production. The classic American city has a grid street layout that ignores topography and has minimal common open space. Although the grid city has a negative image, it is the dominant pattern for the American city and will be the base from which future changes emerge. The bulk of this paper consists of a detailed analysis of two cities, Sacramento and Philadelphia. Sacramento is an example of a typical grid city where infill has been used for urban rehabilitation. Philadelphia is presented as an example of the rehabilitation of existing structures. Calthorpe concludes his analysis by noting the importance of design principles for achieving sustainable communities. For example, the location and density of buildings affect the viability of different transportation mixes. Some of the changes he foresees include: the use of life-cycle cost analysis and replacement as project evaluation criteria; the revaluation of irreplaceable agricultural land and wilderness areas; the evaluation of commuting costs in terms of the long term value of oil, the health costs of pollution and the time value of the rider; and the evaluation of housing costs in terms of maintenance and energy.

Crerar, Alistair D. (1989) "The Sustainable City", *Policy Options* 10(2): 3-5.

Crerar recommends three policy initiatives for achieving a sustainable city. The first would remove the penalties for building energy- and material-efficient cities by replacing average cost charges for municipal services with charges that require those who live in high-cost of service locations to pay more for services than those who live in low-cost service locations. The second initiative would impose a single tax on land, based on the market value of the land and exempting the value of buildings and structures. This incentive would encourage density maximization on individual parcels of land and discourage the use of low-density uses, such as parking lots, in locations that are most desirable because of access to work, to shopping, and to communications facilities. The third initiative involves viewing waste as a resource and transforming the garbage problem into a recycling industry.

Gardner, Julia and Roseland, Mark (1989) "Acting Locally: Community Strategies for Equitable Sustainable Development", *Alternatives* 16 (3): 36-48.

The successful pursuit of sustainable development implies the satisfaction of human needs, maintenance of ecological integrity, attainment of social self-determination, and establishment of social equity. Conventional interpretations of sustainable development pay too little attention to equity considerations or else they assume that inequities will be resolved through economic growth on a scale that would threaten global ecological integrity and jeopardize future generations. In contrast the principles of equitable sustainable development focus on: attention to non-material human needs, the need for the industrialized minority to reduce its overconsumption in the name of social equity and ecological integrity, a willingness to address existing inequities, and attention to issues of social self-determination. The authors investigate the extent to which current strategies meet the requirements of the sustainable development paradigm and find that they largely fail to meet the equity requirements. The four strategies reviewed include sustainable development plans, biosphere reserves, conservation strategies, and the multiple use movement. The authors then survey a number of alternative frameworks, including those associated with the conserver society, the steady state economy, appropriate technology, community economic development, ecofeminism, social ecology, the green movement, bioregionalism, deep ecology, new physics, native world views, and the Gaia hypothesis. All are found to support, at least in part, the principles of equitable sustainable development. The authors describe in more detail a number of specific initiatives. These include: 1. the Turning 2000 project in London, Ontario, which encourages individual citizens to volunteer 12 hours a year for the benefit of their community; 2. the Waging Peace proposal for the northwest region of British Columbia that aims to achieve full employment based upon sustainable resource utilization; and 3. the Chipko tree hugging movement that originated in India. The latter two examples illustrate the potential for control that communities can have over the resources that they depend upon. Two general strategies that also reflect the principle of control are community land trusts and



co-management models. The authors conclude by noting that implementing the community-based strategies they favour will require a considerable restructuring of society.

Rees, William E. and Roseland, Mark (1991) "Sustainable Communities: Planning for the 21st Century", *Plan Canada*, 31 (3): 15-26.

This paper develops an ecological framework for planning sustainable communities and reviews sustainable community initiatives in North America and elsewhere that have already been adopted or have been proposed by municipal governments. The authors note the failure of neoclassical economic theory to maintain natural capital for sustained development and espouse Daly's interpretation of sustainability in the replacement of capital: that each generation should inherit a stock of natural asset no less than the stock of such assets inherited by the previous generation. The implications of Daly's interpretation, known as "strong sustainability", are that measures will have to be developed for planning communities which emphasize the efficient use of urban space, reduced consumption of material and energy resources, improved community livability, and administrative and planning processes which can deal with the accompanying socio-economic and ecological complexities. A sustainable community is one that is characterized by increased community and regional self-reliance, low automobile dependency, and an urban form that depends on the nature of energy supply options. Current practice in achieving the efficient use of urban space encompasses such initiatives as: trip reduction bylaws, automobile restrictions, road pricing, parking measures, free or inexpensive transit, bicycle transportation, street redesign and traffic calming, telecommunications, proximity planning, residential intensification, co-housing, community land trusts, rural area protection and co-management agreements. Initiatives designed to reduce consumption of resources and increase local self-reliance include: energy efficiency targets, district heating and cogeneration, municipal energy conservation campaigns, solar oven cookbooks, a local energy supply concept, energy efficient neighbourhoods, waste reduction goals, packaging restrictions, "pre-cycling" campaigns, municipal composting, polystyrene plastic foam bans and restrictions, integrated recycling centres, constructed wetlands, and solar aquatics waste treatment facilities. Initiatives for improving community livability include: citizen participation, North-South partnerships, gender equity, "disassembly" lines, public-community partnerships, and Healthy Communities projects. Administrative initiatives for achieving sustainability include: environmental commitments and legislation, investment and purchasing policies, eco-counselors, environmental enforcement, municipal environmental impact assessment, municipal environmental management, sustainable community planning processes, and networking and co-operative research.

Richardson, Nigel (1989) **Land Use Planning and Sustainable Development in Canada** (Ottawa: Canadian Environmental Advisory Council).

Richardson defines sustainable urban development as a process of change in the built environment which fosters economic development while conserving resources and promoting the health of the individual, the community, and the ecosystem. His paper summarizes the evolution of modern land use planning in Canada and provides several examples of how contemporary Canadian land use planning can contribute to sustainable development. His examples cover the areas of municipal planning, planning on Crown lands, agricultural land protection schemes, northern land use planning policy, water resources planning, regional economic development plans, environmental impact assessment, and conservation strategies. He concludes that the effectiveness of land use planning as a tool for sustainable development has been demonstrated but that several changes must occur before it can achieve its full potential. The concept of stewardship rather than exploitation must dominate our attitudes towards land use. Governments must make land policy as important as other policies such as health and education policy. The education of professional planners must be re-evaluated since it lacks requirements for a basic understanding of ecological principles and should perhaps incorporate an ethical obligation to care for the land and to safeguard the health of the environment. The first step towards more effective use of land use planning is formal adoption of sustainable development as a goal of land use planning by the federal, provincial, and territorial levels of government. The second step is development of sustainability-oriented national land use policies. A third step is improved integration of land-related programs within a single policy framework.

Richardson, Nigel (1992) "Canada", In Richard Stren, Rodney White and Joseph Whitney (eds.) **Sustainable Cities: Urbanization and the Environment in International Perspective** (Boulder: Westview Press): 145-167.

Richardson notes that current definitions of sustainable development are either inadequate or inappropriate for application to human settlements in Canada and proposes a new one which is more relevant. He defines sustainable urban development as the continuing maintenance, adaptation, renewal and development of a city's physical structure and systems and its economic base in such a way as to enable it to provide a satisfactory human environment with minimal demands on resources and minimal adverse effects on the natural environment. There are five specific aspects of urban sustainability: physical conditions, economic conditions, resource demands, environmental effects, and urban management. Richardson's definition is deliberately narrow, excluding the concepts of satisfaction of human needs, maintenance of ecological integrity, achievement of equity and social justice, and provision for social self-determination and cultural diversity. Subsequent sections in his paper describe the current Canadian urban system and its historical development, the implications of climate change for the urban system, the effects of human settlements on water resources, air quality, energy, land resources,

waste management, and agricultural land loss. Two of the most important barriers to urban sustainability are the private car, which permits low density suburbanisation, and the single-family subdivision, which places heavy burdens on the consumption of energy, water, and infrastructure. Both contribute to urban sprawl. Additional barriers to sustainability are embodied in the legal framework, institutions, and instruments for urban planning and policy-making in Canada. Current examples of progress toward a sustainable city include: Vancouver's Livable Region program which incorporates proposals for reducing dependence on the car and promoting the protection and development of regional open space; Sudbury's 1987 corporate plan whose goal is to guide Sudbury's transition from a conventional growth city to a sustainable development city; environmental coordination offices and policies in Waterloo and Montreal which integrate conservation and environmental protection into the everyday operations and management practices of their municipal administrations; and the Healthy Community movement with its broader focus on human well-being.

Urban Environment Sub-Committee of the Public Advisory Committees to the Environment Council of Alberta (1988) *Environment by Design: The Urban Place in Alberta* (Edmonton: Environment Council of Alberta).

The authors of this report contend that the city can be viewed as a human ecosystem with characteristics similar to those of biological ecosystems. Just as diverse biological systems tend to be more stable, cities that have a diversity of activities, economic opportunities, and intellectual resources are more likely to be stable and flexible in their response to outside forces. The literature suggests that one of the prerequisites for urban sustainability is vitality, or the degree to which the form of human settlements supports the vital functions, the biological requirements and capabilities of human beings. Major considerations in the creation of vitality are: sustenance (the adequacy of the throughput of water, food, air, energy and waste), safety (the absence of environmental poisons, diseases and hazards), and consonance (the degree to which individuals feel comfortable with their surroundings). The report provides an overview of the current state of urbanization in Alberta and describes some of the critical issues facing urban places in the areas of disease, safety, the indoor environment, noise, waste management, transportation, open space preservation, and the outdoor built environment. The latter part of the report illustrates the land use, water, air, social, cultural, recreational and economic interactions that occur between an urban place and its hinterland. The report concludes with a discussion of institutional arrangements for urban management and the decision-making process.

Van der Ryn, Sim and Calthorpe, Peter (1986) "The New Suburban Fabric", In Sim Van der Ryn and Peter Calthorpe (eds.) **Sustainable Communities: A New Design Synthesis for Cities, Suburbs and Towns** (San Francisco: Sierra Club Books): 54-105.

The authors envisage new suburban developments not as "New Towns" or traditional "planned communities" but rather as ecologically planned communities that represent a kind of suburban infill. Some of the basic design principles for these types of communities would involve: 1. utilizing residential densities greater than the existing standards; 2. locating shopping and services so as to reduce automobile dependency; 3. building in a local employment base; 4. devising energy-efficient building strategies; 5. encouraging design that fosters local responsibility for such issues as crime prevention, fire protection and home care of children, the elderly, the sick and the disabled; 6. providing local energy and food production; 7. recycling water and wastes; and 8. integrating community design with the transportation system in order to provide a balance of transportation options. The authors present several case studies to illustrate how the above design principles can be operationalized.

Van Vliet, Willem (1990) "The United States", In Richard Stren, Rodney White and Joseph Whitney (eds.) **Sustainable Cities: Urbanization and the Environment in International Perspective** (Boulder: Westview Press): 169-204.

The bulk of this paper describes several problems currently confronting human settlements in the U.S. Areas covered include housing, transportation, solid waste and air pollution. Van Vliet argues that sustainable development is a normative concept that should be broadened to include consideration of its distributive effects. As examples of the inequitable distribution of development impacts, he cites evidence which indicates that waste facilities are more likely to be located in poor communities with large racial or ethnic minority populations. Research has also shown that air pollution tends to be highest in low income neighbourhoods and that the poor pay disproportionately higher costs for combatting air pollution. Even measures intended to promote sustainable development may produce inequitable impacts. For example, several U.S. cities have enacted growth management ordinances in order to protect the environment and improve the quality of urban life. These ordinances have restricted local housing supply, driven up the price of housing, and created affordability problems for low and moderate income households.

White, Rodney, and Whitney, Joe (1990) "Cities and the Environment: An Overview", In Richard Stren, Rodney White and Joseph Whitney (eds.) **Sustainable Cities: Urbanization and the Environment in International Perspective** (Boulder: Westview Press): 8-51.

The authors define a sustainable settlement as one which does not exceed the carrying capacity of its support regions or hinterlands. The concept of carrying capacity helps define three stages of development which characterize the evolution of human settlements and their hinterlands. In the pre-industrial stage, the size and spacing of cities depended on the size of a city's immediate hinterland and its technological and political ability to increase yields of food and other resources from its hinterland without long-term environmental degradation. In the present, unsustainable stage of development, rich and powerful urban settlements or systems have appropriated the carrying capacity of less powerful settlements or systems and usurped the assimilative capacity of those areas for themselves. In the third, sustainable stage of development, future settlements may still appropriate the carrying capacity of other areas, but only at the expense of offering compensation to the affected settlements for any benefits foregone as a result of that appropriation. Compensation particularly appropriate for Third World communities might be in the form of direct aid, favourable terms of trade, or relaxed immigration policies. The authors conclude by proposing several options for future settlement design and management which reflect choices regarding the preferred density of settlements, the relative centralisation/decentralisation of authority, and the balance between public sector and private sector activities.

## SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL ASSESSMENT

Jacobs, Peter and Sadler, Barry (1990) **Sustainable Development and Environmental Assessment: Perspectives on Planning for a Common Future** (Ottawa: Canadian Environmental Assessment Research Council).

This edited volume contains 11 papers written by Canadian and international academics, practitioners and an environmental activist. The first part of the book examines the question of how current theory and practice in environmental assessment, planning and management reflect and support the notion of sustainability. The first paper in Part I explores the substantive goals of sustainable development, the procedural criteria for achieving them, and the extent to which nine current approaches to decision-making for resource or environmental management support the goals and criteria. Subsequent papers in Part I qualify and expand on the concepts presented in the first paper. Their analysis suggests that there is no one right approach to understanding sustainable development. Part II includes three essays dealing with the fundamental ecological, societal, and philosophical issues that will have to be addressed in order to rethink and restructure environmental assessment in the context of sustainable development. In a concluding chapter, the editors present a preliminary checklist of sustainability criteria

suitable for use in reviewing developments and identify a number of recommendations for future research.

Gardner, Julia E. (1989) "Decision Making for Sustainable Development: Selected Approaches to Environmental Assessment and Management", **Environmental Impact Assessment Review** 9: 337-366.

Gardner provides a brief history of the evolution of the concept of sustainable development and identifies eight principles from the literature that together define sustainable development. These principles are: the satisfaction of human needs; the maintenance of ecological integrity; the achievement of equity and social justice; the provision for social self-determination and cultural diversity; the requirement that approaches to sustainable development seek preidentified goals in a normative, proactive way; the use of analytical approaches which are relational or systems-oriented; the use of adaptive strategies; and the creation of an interactive design for the organization of sustainable development. Nine approaches to decision making for environmental assessment planning and management are reviewed to determine how they support these principles. The approaches reviewed include: ecological frameworks for environmental impact assessment; impact hypothesis statements; environmental impact assessment audits; cumulative effects assessment; bargaining; adaptive environmental assessment and management; sustainable redevelopment; impact zoning; and integrated resource management.

Rees, William E. (1988) "A Role for Environmental Assessment in Achieving Sustainable Development", **Environmental Impact Assessment Review** 8: 273-291.

Rees identifies major gaps and structural weaknesses in current EA practice in Canada and outlines how an improved EA could become part of a regional approach to global sustainable development. Among other things, planning for sustainable development will require identification and monitoring of the cumulative environmental and social effects of human activity at all spatial scales. Sustainable development can be defined in terms of a region's carrying capacity. Regional carrying capacity is the maximum rate of resource consumption and waste discharge that can be sustained indefinitely in a defined planning region without progressively impairing bio-productivity and ecological integrity. Therefore, in ecological terms, any level of development or economic activity that does not exceed the carrying capacity of the planning and management region is sustainable. The cumulative assessment-carrying capacity approach could be used to monitor vital ecological resources in greatest danger of over-exploitation and make it possible to build a crude set of ecological accounts that could be used for estimating the ecological "balance of trade" for any region.

## GREEN CITIES

Cholette, K., Dobson, R., Gerecke, K., Nozick, M. Simpson, R., and Williams, L. (1989) "Green City": An Introduction, *City Magazine* 11(1): 16-23.

The Green City concept has nature at its core and means the shaping of cities to meet human needs in harmony and balance within their bio-regions. Two cities with formal Green City programs are San Francisco and New York. The San Francisco Green City program has nine parts: urban planting in parks, median strips, sidewalk and rooftop planters, community and private gardens, and vacant lots; appropriate, ecologically sound transportation; sustainable planning developed at the grassroots level with active citizen participation and consideration of the cumulative effects of proposed land use changes; reliance on renewable energy sources and improvements to energy efficiency; development of neighbourhood character and neighbourhood empowerment; recycling and reuse; recognizing and expressing regard for unique natural features; fostering urban wildlife; and encouraging socially responsible small businesses and cooperatives. The New York City Green City program is based on six principles: the city must protect and expand its parks, gardens and open spaces; New Yorkers must have clean, healthful air to breathe; the city must ensure abundant clean, healthful water; the city must conserve energy; the city must be responsible for its garbage, sewage, and toxic wastes; the city must ensure environmentally sound development; and the city must provide environmental education for all age levels. Other cities with Green City initiatives underway include Texas, St. Louis, Detroit, Winnipeg, Milwaukee, and Chicago. The theoretical and applied literature on Green Cities suggests that the concept embodies ten principles. These are: bioregionalism; eco-feminism; ecology and social ecology; ecological communities; energy self-sufficiency; local waste management; protection and expansion of parks, gardens, and open spaces; clean, healthy air and water; environmentally sound development; and ecological processes based on decentralized, grass roots, cooperative development. The paper concludes by proposing that ecological audits become standard tools for understanding all aspects of the production that takes place in a community and the consequences of production and consumption activities. The audit would investigate the status and impacts of local production, financing, business, recycling, food, clothing, housing, energy, and transportation.

Gordon, David (1990) **Green Cities: Ecologically Sound Approaches to Urban Space** (Montreal: Black Rose Books).

This volume of edited papers contains chapters on the following topics: defining the Green City, the Ecological city as a self-reliant city, Greening in Asian cities, urban wilderness, urban forestry, naturalizing parks, integrated pest management, ecology parks, urban agriculture, and descriptions of the Green City programs in New York City and San Francisco.

Hough, Michael (1990) "Formed by Natural Process - A Definition of the Green City", In David Gordon (ed.) **Green Cities: Ecologically Sound Approaches to Urban Space** (Montreal: Black Rose Books): 15-20.

In this short paper, Hough identifies five principles embodied in the Green City concept. The first principle is economy of means, implying that a minimum of energy and effort can yield the greatest returns. Examples include the naturalization of formerly manicured landscapes and the rehabilitation of once degraded landscapes with native forests, wetlands and meadows. The second principle is diversity and the resulting ability to withstand stress. A Green City should have both urban wilderness and "hard urban spaces" such as formal gardens, busy plazas, and cultivated landscapes. The third principle is that of productivity and environmental relevance. Urban open space should have a productive and environmental role as well as its traditional recreation and aesthetic functions. Community gardens and urban farms provide food for the poor and contribute to social cohesion in depressed urban neighbourhoods. The environmental function of urban open space includes impounding storm water, modifying urban climate, creating diverse wildlife habitats, and filtering waste waters. The fourth principle is capitalizing on the nature of the place. An example is spending more time on designing outdoor space for liveability in winter and in summer. The final principle is environmental education. Its role is to change urban attitudes and perceptions about the place of nature within an urban environment.

Johnson, Roger (1984) "The "Green City" Concept: Proposals for Auckland, New Zealand", **Town Planning Review** 55(3): 290-312.

The essential objectives of the "Green City" concept are to make public transport an acceptable alternative to private car commuting and to combine the provision of a pedestrian and cycleway system of "Green Ways" with an expanded and enhanced open space system. Supporting objectives include the creation and harvesting of an urban forest, developing commercial and service nodes at major transportation interchanges, increasing housing densities, encouraging new community uses for older buildings and adopting more flexible guidelines for industrial uses in residential areas. Johnson discusses his proposal for a "Green City" plan for the Isthmus area of Auckland, New



Zealand and reviews the city's progress since 1980 in implementing the concept. Proposed measures for reducing reliance on the car for commuting in Auckland include: conversion of some roads in residential areas to cul-de-sacs; establishment of bus priority lanes; initiation of traffic calming measures; discouragement of further expressway construction; and increasing the cost and difficulty of parking in the central business district. "Green Ways" are to be constructed which run parallel to major roads on narrowed residential streets or service lanes, feed into the transportation interchanges, and link the city's open spaces. The sidewalk or footpath in a "Green Way" is reserved for pedestrians and wheelchairs while trees are planted in the roadway between parking spaces. Transportation routes for cyclists include the "Green Ways", special cycleways, and cycle lanes on major thoroughfares.

Mayur, Rashmi (1990) "Vision and Joy of Green Cities", In David Gordon (ed.) **Green Cities: Ecologically Sound Approaches to Urban Space** (Montreal: Black Rose Books): 37-42.

Mayur defines a Green City as one with the following characteristics: it is self-sustaining; material and biological constituents are well-balanced and integrated; relationships among all elements of the city are supportive, cooperative, and not exploitive; waste is viewed as a resource and is recycled; the city contains vast open spaces, gardens, parks, farms, streams, coastlines, and wilderness; it is a conserving city; it is a clean and healthy city with minimal or no pollution and an emphasis on natural living, recreation, sports, and organic food; it provides for a full range of cultural developments. Experiments in Bombay with urban agriculture and the creation of gardens and cultural centres at traffic islands are given as examples of "green" initiatives.

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## URBAN FORESTRY

Sopper, William (1990) "Forests as Living Filters for Urban Sewage", In David Gordon (ed.) **Green Cities: Ecologically Sound Approaches to Urban Space** (Montreal: Black Rose Books): 145-158.

Urban forests can be used as land treatment systems for filtering secondary treated waste water before discharge to groundwater. The advantages of the approach are that it reduces water pollution, it recycles nutrients in the waste water, it replenishes local groundwater supplies, and it preserves open space. Sopper describes the effectiveness and problems associated with the operation of a prototype land treatment system that was established at Penn State University in 1962.

## INTEGRATED PEST MANAGEMENT

Gilkeson, Linda (1990) "Integrated Pest Management", In David Gordon (ed.) **Green Cities: Ecologically Sound Approaches to Urban Space** (Montreal: Black Rose Books): 145-158.

The objective of integrated pest management (IPM) is to suppress, but not to control, insect populations and keep damage to acceptable levels using the safest, most effective and most economical means. There are three steps to developing an IPM program. The first requires identification of the types of insects present. The second step is to determine the injury level and action levels. The injury level is the level at which the unacceptable damage occurs. The action level is the point at which treatment must be applied to stop the injury from happening. The final step is treatment. The paper describes several of the different types of treatment that are possible. These include planting resistant plants, modifying habitats, encouraging attitude changes among city residents, using physical controls, and applying chemical or biological controls.

## ALTERNATIVE TRANSPORTATION

Lowe, Marcia D. (1990) "Cycling into the Future", In L.R. Brown, A. Durning, C. Flavin, H. French, J. Jacobson, M. Lowe, S. Postel, M. Renner, L. Starke, and J. Young (eds) **State of the World, 1990** (New York: W.W. Norton): 119-134.

This paper briefly comments on the environmental impacts of the automobile and then describes the current state of cycling activity in cities and countries around the world. In Japan, national legislation empowers local governments to require that railways and private businesses provide adequate space for bicycle parking. In the Netherlands, government spending on bicycle projects is over 10% of that spent on roadways and cyclepaths cover 13,500 km. The city of Delft's cycling provisions include underpasses and bridges across road intersections, bicycle-activated traffic signals, bicycle stop lines ahead of other traffic, and permission to ride against traffic on some one-way streets. In North America, the city of Davis, California, probably has the highest cycling rate on the continent, with 25% of all trips in the community made by bike. Palo Alto, California, has a 65 km. system of bikeways and a 3.2 km. bicycle boulevard through the city centre. Lowe concludes her paper with a number of recommendations, including the establishment of local bicycle advisory committees, requiring new developments beyond a certain size to include bicycle parking and showers for commuters, ensuring that new or re-built roads and bridges include safe bicycle access, devoting a percentage of all transport spending to cycling facilities, and allocating a specified portion of downtown parking to bicycles.

McClintock, Hugh (1987) "On the Right Track? An Assessment of Recent English Experience of Innovations in Urban Bicycle Planning", *Town Planning Review* 58(3): 267-291.

The development of the post-war new towns program in the U.K. saw the first efforts to consider the needs of the cyclist in town planning. Cycleways were built in the early new towns of Harlow and Stevenage, and in more recent larger scale developments at Peterborough and Milton Keynes. Cycleways should be easy and safe to get on to and away from, have no greater gradients than adjoining roads, and be continuous with safe road crossings. Surfaces must be smooth, well-drained, and well-maintained. They need to lead to destinations that cyclists actually want to reach and are particularly useful when they open up more direct linkages. In most older urban areas, strong physical, political, and economic constraints exist for achieving ideal standards of cycling provision. More emphasis has therefore been placed on traffic management techniques on existing routes, including shared paths for pedestrians and cyclists and cycle lanes on roadways. In some cases, quiet back streets have been designated as advisory cycle routes and special traffic signals for cyclists established in heavy traffic zones. Overall, the state of bicycle planning in the U.K. is much less advanced than it is in countries such as West Germany and the Netherlands.

Tolley, Rodney (ed.) (1990) *The Greening of Urban Transport: Planning for Walking and Cycling in Western Cities*. (London: Bellhaven Press).

This book consists of 21 articles dealing with the principles, strategies and practice of planning for walking and cycling as "green modes" of transportation. The majority of the articles present case studies of European cities or national overviews while others deal with issues such as traffic calming techniques, integrated traffic and transport planning, settlement restructuring, the design of pedestrian networks, and barriers to environmentally sound urban transport policies.

## DECREASING RELIANCE ON THE CAR

Pendakur, V. Setty (1987) "Taming the Automobile: Lessons from Singapore", *Plan Canada* 27(8): 208-214.

Faced with rising traffic congestion in the CBD, Singapore instituted a package of fiscal measures in 1975 which included increased taxes on vehicle ownership and road use, higher parking fees, and an Area Licensing System (ALS). The ALS requires all private cars to obtain a supplementary license for entering the CBD between 7:30 am and 10:15 am. There are 29 control points in the CBD where the licenses are checked. Exemptions from the licensing system are given to all public vehicles, school and private buses with

capacities exceeding 11 passengers, and delivery, emergency, police, and military vehicles. Cars carrying four or more persons are also exempt. Eleven fringe area park and ride car parks were constructed to encourage use of public transit. School buses are incorporated into the public transit system during peak commuting hours and school hours are staggered to accommodate this use. There are 40 km of exclusive bus lanes and bicycles are allowed to use the lanes as well. Vehicle-responsive traffic signals at major bus interchanges decrease transit delays. Taxi fares are low enough to encourage groups to use them for short or medium range trips. However, in order to decrease congestion, taxis may only stop at 23 designated locations within the CBD. The impact of the ALS and other measures has been a reduction in the growth rate of car ownership, restrained car use, and reduced congestion. Before ALS in 1975, 47% of home-to-work trips were by car and 33% were by bus. By 1985, only 15% of home-to-work trips were by car while 69% were by bus. There have also been avoided cost savings of US\$700-800 million in road investments.

Smith, Graham P. (1986) "Calming the Traffic and Sharing the Street", **Plan Canada** 26(4): 108-110.

"Woonerf" is a Dutch term used to describe a street in residential areas which provides a shared road surface with no curbs, controlled parking, and a walking pace vehicle speed limit. About 12% of Utrecht's streets have been redesigned according to the Woonerf philosophy. A 1983 survey of householders on Woonerf streets in the city found that 65% thought that the streets were an improvement over the traditional street.

## ENERGY CONSERVATION

Nicol, Keith (1987) "Building Orientation and Heating Requirements in Canada", **Plan Canada** 27(6): 154-161.

This paper describes the influence of building orientation on residential energy consumption and summarizes the history of energy efficient subdivision design in Canada. The advantages of orientation measures over other approaches are that they are relatively inexpensive, will facilitate active solar collection in the future, and can be controlled by planners. Nicol uses a computer model of building heat loss to calculate the percentage and dollar savings associated with different orientations of a standard house under 12 different climate conditions. A building facing east or west was found to use 2-27% more energy than a south facing building. North facing buildings required 7-45% more energy than the south facing building. The dollar value of the energy savings varies with the building's location, airtightness and insulation characteristics.

## PARKLAND NATURALIZATION

Granger, William (1990) "Naturalizing Existing Parklands", In David Gordon (ed.) *Green Cities: Ecologically Sound Approaches to Urban Space* (Montreal: Black Rose Books): 99-111.

The tradition in most municipal parks and recreation departments through the 1970s was for local parkland to be manicured to short, mown grass standards. Unmanicured landscapes were perceived as messy, collected garbage, provided shelter for rodents and wild animals, and encouraged anti-social behaviour. Naturalized parklands are cost-effective. Granger advocates parkland naturalization through wildflower seed and tree planting as a means of providing diversity in the parkland experience. The most popular recreational activities, namely walking, jogging, bicycling, and picnicking, are possible in naturalized areas. Reforested parkland can cost ten times less to maintain in comparison to manicured, formalized parkland. Reforested urban land also has environmental benefits in the form of less noise, exhaust fumes, and energy consumption in labour, equipment, and fuel for maintenance vehicles. Reforestation of parklands, vacant rights-of-way, old dump sites, and institutional grounds can lead to the creation of a regional network of community forests which provide recreation, watershed management, agricultural land, fuelwood, and construction materials in the city on a sustained yield basis.

## HEALTHY CITIES

Berlin, Susan (1989) "The Canadian Healthy Community Project: Shapes of Reality", *Plan Canada*, 29(4): 13-15

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The Canadian Healthy Community Project originated out of a document released in 1986 by Health and Welfare Canada, entitled "Achieving Health for All", that outlined a health framework for the country. Health and Welfare Canada subsequently provided funding for the project, in cooperation with the Canadian Institute of Planners, the Federation of Canadian Municipalities, and the Canadian Public Health Association. Healthy Community projects operate at the local level and a typical project begins when a municipality passes a Resolution in Council indicating its political commitment to the concept. The next stage is the establishment of a committee that includes members from all city departments, community members, and representatives of the private sector. This committee will seek to identify a small number of health issues facing the community that need to be addressed and then design programs to deal with those issues. Berlin concludes by describing Healthy Community experiences in Dartmouth, Toronto, Edmonton and the province of Quebec.

Hendler, Sue (1989) "The Canadian Healthy Communities Project: Relevant or Redundant?" *Plan Canada* 29(4): 32-34.

Hendler identifies a number of difficulties associated with the development of healthy communities. First, ecological theorists have not yet been able to define what constitutes a healthy environment. Second, developing appropriate goals and objectives can be a complex task. A third problem is the development of suitable indicators for particular communities. A fourth difficulty is that of harnessing political will. A fifth issue is the organization of community workshops and the danger of doing too much in too little time. Finally, efforts must be made to alleviate the concern that the Healthy Communities Project is simply another fad which the planning profession has decided to adopt. The article concludes with a discussion of the theoretical and practical potential of the Project.

## CASE STUDIES

Lehtonen, Esko (1987) "Integrated Community Planning in Finland", *Ekistics* 54: 283-286.

This paper describes two plans for new urban communities under construction in Finland where work places are to be situated within residential neighbourhoods. West Pasila will have 6,000 work places and 5,000 inhabitants. Malminkartano will accommodate 10,000 inhabitants and provide 3,000 to 4,000 work places, mostly in light industry and services. Both plans separate pedestrian from vehicular traffic. Other concepts included in the plans involve locating work places predominantly on pedestrian axes, incorporating existing patches of woodland, making work places within residential neighbourhoods as small as possible, diverting vehicular traffic around residential districts, and preserving the original topography wherever feasible.

Lerner, Sally and Oster, Carolyn (1985) "Conservative Traditions and Ecocommunity Beginnings in Kitchener-Waterloo", *Alternatives* 12(3/4): 46-50.

Lerner and Oster list initiatives that made Kitchener-Waterloo a prototype "ecological community" as early as 1985, and a working example of the integration of conservator society activities at the local level. In the area of employment, Kitchener has a centre which provides counselling, research, and other services for the unemployed. Housing initiatives include a fifty unit energy-efficient co-operative townhouse development as a first step towards achieving affordable housing. Kitchener-Waterloo is also a demonstration site for "Granny Flat" housing for senior citizens. The community has a food co-operative, a regional food bank, and two farmers' markets. Water supply is an important issue in Kitchener-Waterloo and there is a Water Conservation Programme that has been active in promoting awareness about the technology available and the importance of water conservation with the construction and plumbing industries,

government, and the public. A Regional Advisory Committee on Water Conservation coordinates conservation activities among three levels of government. The regional government offered a rebate programme for the installation of water-efficient fixtures in new buildings and a Water Use Index appears in local newspapers during the summer to increase awareness about water availability. Kitchener is a leader in the field of waste management. It was the first community in Ontario to provide city-wide curbside collection for recyclables. It also has a buy-back centre for recyclables and used clothing, a home composting programme, and household hazardous waste days. To promote industrial waste reduction, the region established an industrial waste exchange and a phone hotline to the region's pollution laboratory.

Overtveld, J.C. (1990) **The Application of "Green Roof" Legislation to the City of Ottawa Official Plan** (Ottawa: University of Ottawa, Faculty of Law; available from the Sustainable Development Research Division, Environment Canada).

The greening of above-grade and at-grade urban spaces has been shown to improve air quality, reduce storm-water run-off and inner city heat, reduce noise pollution, moderate temperature, and improve the overall aesthetic quality of life in the city. In 1988, the city of Mannheim, West Germany, passed a "green roof" bylaw for all new developments. The developer's costs of complying with this bylaw are alleviated by increased height and density allowances. Whenever new construction, demolition or external renovation takes place on property in Mannheim's inner city core, front lawns must be seeded and cannot be used for parking or storage. One tree of a certain minimum size must be planted for every 150 sq. metre of lawn space. In new parking lots, there must be one tree planted for every three parking spaces in the lot and the parking surface must be of interlocking brick with openings for grass. Any new or renovated building larger than 12 ft. by 12 ft. and having a roof with a slope of less than 10 degrees, must have the roof surfaced with sod, planters, or trellised creeping vines. Overtveld describes the Mannheim bylaw in detail and suggests that "green roof" policies could be enacted by Ottawa and other municipalities in Ontario under a new provision of the Planning Act which permits bonus zoning.

Pearson, Rob (1987) "Rebuilding the Lower Don Valley, Sheffield", *Planner* 73(6): 35-38.

The Lower Don Valley covers 860 hectares and was once a thriving community of steel manufacturing plants, workers' housing, shops and support facilities. With the collapse of the steel industry, buildings and land were abandoned. Four hundred hectares of land are now vacant or derelict. In 1983, Sheffield council approved a plan for the valley which formally recognized the demise of the steel industry and proposed a new strategy which would continue to help existing industry, but would also create a new mix of land uses featuring recreation, leisure and tourism developments in a parkland setting. A linked open space system will cover 50 hectares and include an athletics centre, an employment

park for technology-based industry, and a leisure park. Environmental improvement corridors will run along the major roads, the canal, the river, and the railway. The corridors will be connected to neighbouring residential areas by a series of "green wedges" containing significant tree planting and will be complemented by footpaths and cycleways. By 1987, several of the initiatives had been completed and it appeared that the private sector was beginning to show considerable interest in redeveloping major sites in the valley.

Smith, Desmond (1989) "Local Area Conservation: How One Suburban Municipality Utilizes Environmental Planning to Conserve its Natural Heritage", *Plan Canada* 29(5): 39-42.

In the 1960's, North Vancouver initiated environmental studies of its potentially developable land under the auspices of its Landscape Reconnaissance Program. Consultants were hired to identify natural areas that could be protected well in advance of development. The natural areas included areas rich in wildlife habitat, such as ravines, streams, and floodplains, prime forest lands, scenic features, and areas supporting rare or endangered species. Those areas best capable of supporting development in terms of slope, hydrology, and surficial geology were also identified. Indian River, with 1,290 dwelling units, was the first new neighbourhood to be designed using information from the program. Areas unsuitable for development from a geotechnical view were excluded from subdivision design. The best natural areas were then designated as conservation zones within the overall design layout. These included three prime areas of natural forest which were to contain limited footpaths connected to the neighbourhood's pedestrian circulation system and nearby provincial park trail system. The remainder of the developable area was split up into distinct design parcels with natural boundaries suggested by the terrain, soil conditions, hydrological patterns, and access to the external road network and public transit services. Greenbelts separate the parcels and most are connected by sidewalks or footpaths to a central neighbourhood park.



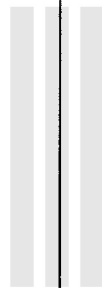


The Intergovernmental Committee on Urban and Regional Research (ICURR) was set up in 1967 following a Federal-Provincial Conference on Housing and Urban Development. The Committee comprises senior officials from the Federal, provincial and territorial governments of Canada who meet regularly to oversee ICURR's activities – the operation of an information exchange service and research program. ICURR's major objective is to foster communication between policy-makers across Canada working in the fields of urban, rural and regional planning, economic development, public administration and finance, housing, recreation and tourism, transportation and the environment. It also seeks to increase the level of understanding of urban and regional issues through research and consultation.

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Créé en 1967 à la suite d'une conférence fédérale-provinciale sur l'habitation et l'aménagement urbain, le Comité intergouvernemental de recherches urbaines et régionales (CIRUR) regroupe des représentants des administrations fédérale, provinciales et territoriales du Canada qui se réunissent régulièrement pour orienter le champ d'activités du CIRUR : la gestion d'un service d'échange de renseignements et d'un programme de recherche. Le CIRUR a pour objectif principal de favoriser les communications entre les décideurs d'un bout à l'autre du Canada travaillant dans les domaines de l'urbanisme, de l'aménagement rural et régional, du développement économique, des finances et de l'administration publiques, du logement, des loisirs et du tourisme, des transports et de l'environnement. Il a également pour but d'élargir le champ de connaissance des questions urbaines et régionales par le biais d'activités de recherche et de consultation.

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