

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

***Volume I: Summary Report***



***by Virginia W. Maclaren***

**ICURR** Intergovernmental Committee on Urban  
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**SUSTAINABLE URBAN DEVELOPMENT IN CANADA:  
FROM CONCEPT TO PRACTICE**

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**VOLUME I: SUMMARY REPORT**

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**August, 1992**

**A Research Report Prepared for the Intergovernmental Committee on  
Urban and Regional Research**

Published by **ICURR PRESS**  
Suite 301, 150 Eglinton Avenue East,  
Toronto, Ontario  
Canada M4P 1E8  
Tel: (416) 973-5629 FAX: (416) 973-1375

Volume 1 Second Printing August 1992  
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ISBN 1-895469-12-0 (set)  
ISBN 1-895469-13-9 (v.1)



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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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## ACKNOWLEDGEMENTS

Completion of this study would not have been possible without the cooperation and assistance provided by all those who agreed to participate, either by giving their time for interviews, helping to track down documentation, identifying contacts, or providing follow-up information. I would also like to thank Dr. Claude Marchand from ICURR for her guidance throughout the project, Dr. Claude Marchand and Gilbert Heroux for their preparation of the Quebec case studies, Sonia Labatt for her assistance in researching the annotated bibliography, and ICURR's Committee of Research Directors for their review comments.



## 1.0 INTRODUCTION

Since the publication of the Brundtland report in 1987 (World Commission on Environment and Development, 1987), governments at all levels in Canada have become increasingly active in promoting the concept of sustainable development. Research undertaken in the field to date focuses almost entirely on sustainable development at the international and national levels. With the exception of recent contributions by Rees and Roseland (1991) and Tomalty and Hendler (1991), there has been little analysis of the methods for and implications of adopting sustainable development practices at the local level. In the absence of such research, municipalities attempting to resolve pressures in the urban environment are lacking in guidance about what sustainable development initiatives are possible, what will work and what will not. This study will attempt to address the above research gap by investigating how some of Canada's larger municipalities are seeking to operationalize the concept of sustainable urban development (SUD).

The term "sustainable development" has been defined in many different ways. One of the most widely quoted is the following:

"[Sustainable development is development] that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987: 8).

Many have expressed dissatisfaction with this definition because of its vagueness and have attempted to provide more detailed definitions. For example, Julia Gardner (1989) identifies four of the substantive principles of sustainable development as the satisfaction of human needs, the maintenance of ecological integrity, the achievement of equity and social justice, and the provision for social self-determination and cultural diversity.

Doering et al. (1991), Daly and Cobb (1989) and others suggest that the World Commission on Environment and Development (WCED) definition is deliberately vague because of the WCED's need to arrive at a definition that would be accepted by all WCED members. Dovers (1990) contends that the vagueness of sustainable development definitions derives from the fact that the concept is a value-based concern and a general social goal. As a general goal or ethic, he feels that definition of the concept is inherently difficult but becomes more clearly defined as it is translated into policies and specific actions.

Defining and interpreting the concept of sustainable *urban* development has proven to be equally difficult. In one of the few pieces in the literature on sustainable cities, Nigel Richardson (1989: 14) defines it 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."

He further refined his definition in a later paper (Richardson 1992):

"... [sustainable urban development is] 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."

Given the wide variety of sustainable development definitions currently in use and the paucity of SUD definitions, one of the goals of this study is to discover how municipal officials interpret the concept and to identify the commonly perceived elements of an operational definition. The study also examines the variety of plans, policies and other tools that are currently being used to address the issue of SUD and problems or successes that have been encountered in their use.

Section 2 of this report discusses the research methodology used in the study while Section 3 focuses on how municipal officials define the concept of sustainable development in an urban context. The fourth section comprises the bulk of this report and consists of a summary of all initiatives identified by respondents as contributing towards the achievement of sustainable development. The final sections present general trends in operationalizing SUD, problems encountered, lessons learned and directions for future research.

## **2.0 RESEARCH METHODOLOGY**

Twenty-three municipalities across Canada were included in the study. Three criteria were used in their selection:

1. at least one municipality from each province and territory;
2. the largest municipalities in each province and territory;  
and
3. large municipalities with known sustainable urban development initiatives.

Table 1 identifies the municipalities selected by province and territory and provides both their national and provincial/territorial population ranking. Due to time and budgetary constraints, it was not possible to satisfy entirely the second and third sample selection criteria identified above. Criterion 3 was given priority in the selection process and, as a result, some of the largest municipalities in Canada or in a province were excluded from the study.

In 18 of the municipalities selected, information was collected by means of personal interviews and in the remaining five municipalities, telephone interviews were used. Only local municipalities were included in the study, not regional governments. In each municipality, interviews were conducted in two phases: the first phase consisted of interviews with heads of department and the second phase with program managers. The

survey was administered between February, 1991 and June, 1991. Appendix A contains the questionnaire used for heads of department while that for program managers can be found in Appendix B. Volume III of this report contains the full responses from each interview.

The survey of heads of department first asked whether they had heard of the concept of sustainable development and, if so, to provide their own definition of it. Those respondents who had not heard of the concept were read previously published definitions of the term from the World Commission on Environment and Development (1987), Gardner (1989) and Richardson (1989). All respondents in Phase I were then asked to identify any policies, programs, plans, projects, new positions, administrative structures and internal or external committees that they felt were contributing to sustainable development in their municipality. They were asked to identify only those initiatives that were managed, staffed, funded or sponsored by the municipality in whole or in part. Local initiatives that were entirely community-run or undertaken by regional governments or by business groups or by a combination of all three groups were therefore excluded from the study. In Phase II, the initiatives identified by heads of department were investigated in more detail by interviewing program managers.

In all municipalities, the heads of the Public Works and Planning Departments were interviewed. If time permitted and if the department existed within a specific municipal organization, attempts were also made to speak with the heads of the Parks and Recreation Department, the Social Planning Department, the Purchasing and Supply Department, the Chief Administrative Officer and the Medical Officer of Health.

PROVINCE/ TERRITORY	MUNICI- PALITY	POPULATION (1986)	NATIONAL RANK	PROVINCIAL RANK	TYPE OF INTERVIEW
British Columbia	Victoria	66,303	57	10	Site visit
	Vancouver	431,147	8	1	Site visit
	Burnaby	145,161	22	3	Site visit
Alberta	Edmonton	573,982	5	2	Site visit
	Calgary	636,104	2	1	Site visit
Saskatchewan	Regina	175,064	19	2	Site visit
Manitoba	Winnipeg	594,551	4	1	Site visit
Ontario	Kitchener	150,604	21	11	Site visit
	Waterloo	58,718	69	30	Site visit
	Guelph	78,235	44	25	Site visit

Table 1. LIST OF MUNICIPALITIES SURVEYED					
PROVINCE/ TERRITORY	MUNICI- PALITY	POPULATION (1986)	NATIONAL RANK	PROVINCIAL RANK	TYPE OF INTERVIEW
	Toronto	612,289	3	1	Site visit
	Peterborough	61,049	65	29	Site visit
	Ottawa	300,763	12	7	Site visit
Quebec	Montreal	1,015,420	1	1	Site visit
	Sherbrooke	74,438	49	3	Site visit
	Quebec City	164,580	20	9	Site visit
New Brunswick	Fredericton	44,352	89	3	Telephone
Prince Edward Island	Charlottetown	15,776	212	1	Telephone
Nova Scotia	Halifax	113,577	29	1	Site visit
	Dartmouth	65,243	59	2	Site visit
Newfoundland	St. John's	96,216	33	1	Telephone
Yukon	Whitehorse	15,199	223	1	Telephone
Northwest Territories	Yellowknife	11,753	294	1	Telephone

Source: Census Canada 1986. Catalogues 92-109 to 92-120. Comité on Urban and Regional Research

The results of this study should not be viewed as a complete inventory of current practice but rather as a compendium of different approaches being used. The results cannot be considered an inventory because department heads were asked to list all of the initiatives under way or under consideration by their municipality *which they felt* contributed to the goal of operationalizing sustainable development. The list of initiatives provided therefore depended on the respondent's interpretation of SUD and the respondent's evaluation of the extent to which an initiative was relevant. No attempt was made in this study to compare the initiatives suggested by respondents against a set of criteria or principles for judging the extent to which the initiatives do or do not contribute to promoting SUD.

### 3.0 DEFINING SUSTAINABLE URBAN DEVELOPMENT:

The first question asked of department heads was whether they had heard of the concept of sustainable development or sustainable urban development (SUD) and, if so,

how they interpreted the concept. The definitions offered ranged from the very narrow to the very broad. Many department heads tried to define the concept within the context of their department's operations. Almost all (94%) of the 71 heads of department interviewed had heard of the concept and most (81%) were able to provide their own interpretation of it.

Table 2 categorizes the words or phrases used by respondents in their definitions into different theme areas. Allocating definitions to theme areas was complicated by the fact that some definitions were quite general while others were more specific in nature. For example, one respondent defined SUD to mean "self-sufficiency" while another stated that SUD requires "self-sufficiency in services provision." The former phrase was classified into the category "Self-sustaining" and the latter phrase into the more specific category of "Infrastructure and Services."

Some of the information presented in Table 2 requires clarification. For example, the meaning of phrases allocated to the first theme area in Table 2 is a little ambiguous. Some respondents may have used the term "resources" to imply natural resources while others appeared to use the term in a broader sense, implying human resources, economic resources, infrastructure resources, etc. The numbers in brackets after each heading in the table indicate the number of times that particular theme was mentioned by respondents. Since a few respondents mentioned more than a single theme in their definitions, the numbers in brackets sum to an amount that is greater than the number of heads of department providing definitions.

Table 2. A Classification of Themes Embodied in Respondents' Definitions of Sustainable Urban Development.	
<b>Resources [8]</b>	<p>Efficient use of resources.</p> <p>Replacement of resources that are used.</p> <p>No net depletion in the use of resources.</p> <p>Sustained use of resources.</p> <p>Equilibrium between the consumption of goods and the resources necessary to produce those goods.</p>
<b>Self-sustaining [3]</b>	<p>A self-sustaining urban area.</p> <p>Local self-reliance.</p> <p>Self-sufficiency.</p>
<b>Infrastructure and Services [6]</b>	<p>Economically self-sustaining municipal programs and operations.</p> <p>Ability to sustain infrastructure at a reasonable cost and level of service.</p> <p>Self-sufficiency in services provision.</p> <p>Efficient and affordable provision of infrastructure.</p> <p>A commitment to a balanced budget process.</p>



Table 2. A Classification of Themes Embodied in Respondents' Definitions of Sustainable Urban Development.
<p><b>Growth and Economy [6]</b>            A level of growth capable of maintaining a viable urban economy.            Self-perpetuating growth and development.            Efficient development.            Sustained development.</p>
<p><b>Environment [16]</b>            Ecologically sustainable development.            Development that does not damage the environment            Development which maintains existing ecosystems.            Development that is environmentally sustainable.            Development that fosters progress without having a negative impact on the environment.            Policies and service delivery that ensure sustainability of the biosphere.</p>
<p><b>Infrastructure/Services and Environment [2]</b>            Basic infrastructure provision that attempts to mitigate potential environmental impacts.            Delivery of basic services to the population without disturbing the environment.</p>
<p><b>Economy and Society [3]</b>            Development that improves the economic and social structure of the city.            A holistic concept that implies interdependency between economic and social objectives.            The creation of places of work and residence where there is a cohesive, enduring community structure.</p>
<p><b>Future Generations [10]</b>            Development that considers the needs of the future.            Development that ensures future generations have the same resources and environment available to them that we do.            Awareness of the impacts of decision-making on the future.            Preservation, conservation and utilization of resources without compromising the needs of future generations.            Management of our human and physical capital so as to enhance and not harm the lives of future generations.            Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (taken from the Brundtland Report).</p>
<p><b>Quality of Life [3]</b>            A sustainable quality of life.            Linkages between development, quality of life and economics.            A level of development that infrastructure and resources are capable of supporting without causing a deterioration in the quality of life.</p>
<p><b>Multiple Components [3]</b>            Development that does not create a net deficit in environmental, social or economic resources.            Development which balances the rights of the individual and the needs of society with the need to conserve our natural resource base and enhance the natural environment.            Perpetuation of the community in a healthy state that encompasses the economic, physical, social and cultural environments.</p>

One respondent felt that the term was simply a new "buzz word" describing traditional, long-range planning but with a stronger environmental component. In contrast, another respondent claimed that the term was not a new buzz word but rather represented a new value structure. A third respondent described SUD as a bundle of terms that each organizational unit adapts for its own use. A fourth felt that sustainability does not necessarily have anything to do with development.

Several respondents questioned the applicability of the concept of sustainable development to the municipal level as opposed to the national or provincial levels. These respondents tended to view SUD as implying self-sufficiency or self-reliance. Several other respondents expressed dissatisfaction with the term. One felt that the concept of a conservation strategy was more appropriate than the concept of sustainable urban development because conservation strategies include such issues as environmental protection, environmental enhancement and restoration. Others suggested that SUD is not an appropriate concept for municipalities with strong "no-growth" movements or for municipalities where re-development rather than new development is the main concern. A similar dissatisfaction has been expressed by Regier and Baskerville (1986). They suggest that "sustainable redevelopment", with its focus on the rehabilitation of degraded natural environments and natural resources, is an important aspect of sustainability that is neglected by current definitions.

Although some themes dominate, the results presented in Table 2 suggest that there is no commonly-held interpretation of the concept of SUD among municipal officials across Canada. There was little consistency among department heads from the same departments in different municipalities. On the other hand, there was a slight tendency for some department heads within the same municipality to emphasize similar themes (e.g. Vancouver, Calgary, Guelph, Toronto, Sherbrooke, and Whitehorse).

The theme appearing most frequently in the definitions above is the need to minimize or eliminate the damage caused to the environment by development. As will be seen in the sections that follow this emphasis on environment translate into a preponderance of environment-oriented initiatives among those identified by municipal officials as contributing to SUD. The second most frequently occurring theme is that of having regard for the impact of development today on the future and on the needs of future generations. Next in importance are the themes of economics and infrastructure/services provision. This latter theme is one that is not frequently seen in traditional definitions of sustainable development. It might therefore be considered a significant distinguishing characteristic of SUD as it is currently viewed by local municipalities.

## 4.0 SUMMARY OF INITIATIVES

This section provides a descriptive and tabular summary of the initiatives identified in the survey. It classifies most of the initiatives by their home departments, namely Planning/Development, Public Works/Engineering, Parks and Recreation, Public Health, or Social and Community Services. Corporate initiatives, and initiatives to establish new City Offices, Advisory Committees or Inter-departmental Committees have been grouped separately as have initiatives on the specific topics of waste management, energy management, environmentally friendly purchasing policies and SUD statements in Official Plans. The last part of this section lists programs or policies that have been introduced at the municipal level to deal with global environmental problems.

Although these initiatives may contribute to the achievement of SUD, they were not necessarily motivated by that goal. A few of the respondents actually stated that although they felt that many of the initiatives they were identifying contributed to SUD, the initiatives were not inspired by a need to achieve it. For example, most of the initiatives relating to energy management and conservation were motivated by a concern over energy costs and energy security well before the term sustainable development became popular. In fact, the only initiatives which explicitly identify the achievement of SUD as a goal are a selected number of planning and policy documents. Examples of these are the Official Plans for Edmonton and Ottawa, among others, Regina's sustainable subdivision concept, and Guelph's Green Plan. The extent to which the initiatives identified in this study contribute to achieving SUD may vary, but no attempt has been made at this stage to evaluate the degree of relevance or the strength of their contributions.

Where appropriate, tables have been divided into two sections: a section listing programs, policies and projects, and another listing administrative initiatives. The tables include codes after each initiative indicating the current status of the initiative, the number of municipalities which have reached that stage and, where available, the year in which each initiative was first implemented. If the name of a municipality has been underlined, then a detailed description of that municipality's initiative can be found in Volume III of this report. The current status codes appearing in the tables are defined as follows:

UC = under consideration    I = implementation    OH = on hold  
 CD = conceptual design    C = completed    A = abandoned  
 PP = pilot project

### 4.1 Planning/Development Departments

Table 3 lists the SUD initiatives that are currently being investigated or implemented in Planning and Development Departments in the municipalities surveyed. The table shows that the impact of development on the environment is becoming an important consideration in the operations of planning departments across Canada. Although only one or two municipalities may have implemented a given initiative, those municipalities which have done so tend to be leaders and are good indicators of future trends. Many

initiatives in Table 3 impose new requirements on developers, some of which apply to development in certain locations (e.g. on contaminated lands or in river valleys) and others which apply regardless of location but address specific issues, including energy efficiency, waste minimization, water conservation, storm water management, bicycle storage and tree replacement. Some of these initiatives involve the preparation of detailed environmental assessments or management plans while others have less rigorous requirements. As an alternative to developer-prepared environmental reviews, three planning departments have instituted a regular internal review process of all development applications in order to evaluate the environmental implications of those developments.

Another trend being pursued by several municipalities is the inclusion of policies and statements in their Official Plans that embody SUD concepts. This trend will be discussed in more detail later in the report.

Table 3. SUD INITIATIVES IN PLANNING/DEVELOPMENT DEPARTMENTS	
<u>Programs/Policies/Projects</u>	
SUD Policy Statements	
1.	SUD statements and policies in Official Plans. 6CD ( <u>Regina</u> , <u>Winnipeg</u> , <u>Toronto</u> , <u>Ottawa</u> , <u>Sherbrooke</u> , <u>Fredericton</u> ), 3I ( <u>Edmonton</u> 1990, <u>Guelph</u> 1987, <u>Quebec City</u> 1988)
2.	SUD statements and policies in Development Strategies. 1C ( <u>Calgary</u> 1988)
3.	SUD statements and policies in Zoning Bylaws. 1CD ( <u>Regina</u> )
Requirements for New Developments	
4.	Environmental Assessment/Review (EA/R) requirements for new developments. 2I ( <u>Halifax</u> 1984, <u>St. John's</u> 1988)
5.	EA/R requirements for new developments in ESA's. 2I ( <u>Kitchener</u> 1979, <u>Guelph</u> 1987)
6.	EA/R requirements for new developments in River Valleys. 1I ( <u>Edmonton</u> 1985)
7.	EA/R requirements for new developments on contaminated lands. 1CD ( <u>Ottawa</u> )
8.	EA/R requirements for new developments in suburban growth areas. 1I ( <u>Edmonton</u> )
9.	EA/R requirements for new developments involving hazardous substances. 1CD ( <u>Regina</u> )
10.	Contaminated soils policy for new development applications. 3I ( <u>Vancouver</u> 1990, <u>Toronto</u> , <u>Montreal</u> )
11.	Waste management requirements for new developments. 1I ( <u>Toronto</u> 1990)
12.	Transportation demand management requirements for new developments. 1I ( <u>Toronto</u> 1991)
13.	Energy efficiency requirements for new developments. 1I ( <u>Toronto</u> 1991)
14.	Water conservation requirements for new developments. 1I ( <u>Toronto</u> 1991)
15.	Storm water management requirements for new developments. 2I ( <u>Guelph</u> , <u>Peterborough</u> )
16.	Bicycle storage and parkade requirements for new developments. 1I ( <u>Vancouver</u> )
17.	Tree replacement bylaws/management requirements. 1CD ( <u>Kitchener</u> ), 1I ( <u>Vancouver</u> )
18.	Environmental site planning requirements for new developments. 1I ( <u>Burnaby</u> , <u>Waterloo</u> )
19.	New industrial/commercial development land dedication requirements for the protection of natural areas and/or open spaces. 1I ( <u>Waterloo</u> )
20.	New industrial/commercial development parkland dedication requirements. 1UC ( <u>Waterloo</u> )

Table 3. SUD INITIATIVES IN PLANNING/DEVELOPMENT DEPARTMENTS	
<b>Inventories</b>	
21.	Environmentally Sensitive Areas (ESA) policies/inventories 1CD ( <u>Edmonton</u> ), 6I ( <u>Calgary</u> , <u>Kitchener</u> 1979, <u>Guelph</u> 1987, Peterborough, Quebec City, St. John's)
22.	Inventory of trees on public and private lands. 1I (Sherbrooke)
<b>Compact Urban Form and Reduced Reliance on the Car</b>	
23.	Relaxed zoning to encourage working in the home. 1CD (Vancouver)
24.	Downtown rejuvenation programs. 2I (Halifax, <u>Winnipeg</u> 1986)
25.	Downtown intensification programs. 1CD (Kitchener), 3I (Victoria, Vancouver, Guelph)
26.	Housing infill programs. 1CD (Charlottetown), 2I (Regina, Halifax)
27.	Policies for access by proximity rather than by transportation. 1CD ( <u>Vancouver</u> )
<b>Sustainable Subdivisions</b>	
28.	Sustainable subdivision designs. 1CD ( <u>Regina</u> )
29.	Subdivision cisterns. 1PP ( <u>Waterloo</u> )
<b>Others</b>	
30.	Campaign to attract value added technology-driven enterprises that do not harm the environment. 1I (Waterloo)
31.	River basin management/improvement studies. 2CD (Guelph, <u>Toronto</u> )
32.	Increased waterfront setbacks (because of potential sea level from the Greenhouse Effect). 1I (Charlottetown)
33.	State-of-the-Environment reports. 1CD (Burnaby)
34.	Industrial lands preservation policies. 1CD (Vancouver)
35.	Energy efficiency components/requirements in urban design projects. 2I (Vancouver, Kitchener)
36.	Internal environmental comments on site plan, area plan and rezoning applications. 2I ( <u>Vancouver</u> 1991, <u>Ottawa</u> 1990)
37.	Heritage building preservation policies/planning functions. 1CD (Kitchener), 2I (Edmonton, Quebec City)
38.	Land acquisition program. 1I (Quebec City)
<b>Administration</b>	
39.	Establishment of Environmental Advisory Committees to review development applications. 1CD (Whitehorse), 1I (St. John's 1988)
40.	Creation of an "Environmental Planner" position. 2I ( <u>Burnaby</u> 1989, <u>Toronto</u> 1990)
41.	Creation of a "Bicycling Planner" position. 1I (Toronto)

Two municipalities have responded to increasing demands on their staff to provide advice on environmental matters by creating a new position in environmental planning. Some planning departments have indicated that lack of environmental expertise in their departments has been a significant barrier to designing and implementing SUD initiatives. Another response to this problem has been to appoint environmental experts from the general community to Environmental Advisory Committees to assist in the review of applications. A third response has been to send applications with potential impacts on the environment to a higher level of government for comment.

A final initiative of note in Table 3 is State-of-the-Environment (SOE) reporting. This is one of several examples in this report of an initiative that can have more than a single home. SOE's are currently in preparation or have already been completed by the Environmental Protection Office in Toronto's Public Health Department and by Environmental Services in the City of Ottawa's Department of Engineering and Works.

#### 4.2 Public Works/Engineering Departments

Some of the Public Works/Engineering Department initiatives listed in Table 4 are clearly more popular than others. Waste reduction/recycling programs were reported by 18 municipalities, followed by energy management/conservation programs (8) and water conservation programs (6). Many of the initiatives managed by Public Works departments can also be found in other departments. For example, Public Health departments in two municipalities developed and manage their respective CFC bylaws and a Parks and Recreation department in another municipality handles the City's urban forestry program. More details on municipal energy management and waste reduction programs can be found in Tables 12 and 13.

Two contrasting initiatives in Table 4 illustrate Dovers' (1990) concept of "sustainability in context." He feels that there is no single "best" sustainable society but rather an infinite variety of them, shaped by the context of time and place and influenced by the community's economic, political and resource bases. The first initiative in this example is Victoria's policy for providing an abundance of on-street and public off-street parking (at less than market rates) to sustain the retail focus of the downtown core. A contrasting set of initiatives are Calgary's Air Improvement Resolution to encourage reduced use of the automobile and Toronto's requirement for transportation demand management plans for new developments. While the Victoria initiative aims to facilitate automobile use in order to sustain economic activity in the downtown core, the Calgary and Toronto initiatives aim to discourage automobile use in order to improve air quality and reduce global warming.

Table 4. SUD INITIATIVES IN PUBLIC WORKS/ENGINEERING DEPARTMENTS.

Programs/Policies/Projects

Water:

1. Storm water management requirements for new developments. 2I (Kitchener, Waterloo)
2. Storm water management plans/studies. 2I (Waterloo, St. John's)
3. Storm water retention ponds. 2I (Peterborough, Ottawa)
4. Water conservation requirements for new developments. 2I (Waterloo, Toronto 1991)
5. Sewage treatment plant construction/upgrading. 2CD (Halifax, Whitehorse), 4I (Calgary, Regina, Waterloo, Guelph)

Table 4. SUD INITIATIVES IN PUBLIC WORKS/ENGINEERING DEPARTMENTS.	
<u>Programs/Policies/Projects</u>	
Water:	
6.	Master Watershed Plans/Studies. 3I (Kitchener, <u>Waterloo</u> , Guelph)
7.	Water conservation program. 4I ( <u>Calgary</u> , Regina, Waterloo, Yellowknife)
8.	Lawn watering bylaw. 1I (Kitchener)
9.	Water quality improvement program. 3I (Victoria, Winnipeg, Toronto), 1I ( <u>Ottawa</u> 1990)
10.	Combined sewer separation. 2I (Kitchener, Ottawa)
11.	Underground storage tank rehabilitation/monitoring program. 2I (Calgary, Ottawa 1990)
12.	Change to constant price from variable price charge for water billing. 1I (Kitchener)
13.	Sewage system master plan. 1I (Toronto)
Energy:	
14.	Energy conservation/management program. 9I ( <u>Calgary</u> 1980, Edmonton 1981, <u>Regina</u> 1979, <u>Winnipeg</u> 1981, <u>Kitchener</u> 1980, Toronto 1991, <u>Ottawa</u> 1978, Montreal, Halifax)
15.	District heating and cooling study. 1CD (Toronto)
16.	Energy efficiency requirements for new developments. 1I ( <u>Toronto</u> 1991)
Air:	
17.	CFC Policy/Bylaw. 1CD (Calgary), 1I ( <u>Ottawa</u> 1989)
18.	CO2 Policy. 1CD ( <u>Ottawa</u> )
19.	CFC recovery program. 1CD (Montreal), 1PP (Toronto)
20.	Methane recovery at City landfill. 1I (Ottawa)
21.	Asbestos removal in City buildings. 1C (Ottawa), 1I (Calgary)
22.	Sludge dewatering and disposal on land. 1I ( <u>Winnipeg</u> 1990)
23.	Odour control program for sewage treatment plants. 1I (Calgary)
Waste:	
24.	Waste recycling/reduction program. 17I ( <u>Vancouver</u> , <u>Edmonton</u> , <u>Calgary</u> , <u>Regina</u> , <u>Winnipeg</u> , <u>Kitchener</u> , <u>Waterloo</u> , <u>Guelph</u> , <u>Toronto</u> , <u>Peterborough</u> , <u>Ottawa</u> , Montreal, Sherbrooke, Quebec City, Fredericton, Charlottetown, <u>Halifax</u> , Whitehorse)
25.	Waste reduction requirements for new developments. 1I ( <u>Toronto</u> 1990)
Transportation:	
26.	Urban transportation clearways. 1I (Toronto 1990)
27.	Automobile use reduction program. 1I ( <u>Calgary</u> 1990)
28.	Traffic calming policy. 1CD (Toronto)
29.	Transportation demand management requirements for new developments. 1I ( <u>Toronto</u> 1991)
30.	Transportation impact assessment requirements. 1I ( <u>Regina</u> )
31.	Bicycle Master Plan. 1C (Vancouver)
32.	Bicycle parking standards study. 1CD (Vancouver)

Table 4. SUD INITIATIVES IN PUBLIC WORKS/ENGINEERING DEPARTMENTS.	
Land:	
33.	Stoop and scoop bylaw. 1I (Ottawa)
34.	Road salt reduction and use of road salt alternatives. 1C (Ottawa 1988), 4I (Calgary, Montreal, Sherbrooke, Quebec City)
35.	Hazardous industrial land inventory. 1C (Ottawa 1988)
36.	Ban on disposal of untested soil at clean fill disposal site. 1I (Toronto)
37.	Snow disposal master plan and study to find alternative snow disposal methods to river disposal. 1I (Montreal)
38.	Study on the transport of hazardous materials. 1CD (Montreal)
Other:	
39.	Environmental audit of department activities. 1C (Ottawa 1990)
40.	Offer to host a hazardous waste management facility. 1I (Winnipeg 1990)
41.	Pesticide reduction program. 1I (Sherbrooke), 1OH (Ottawa)
42.	Open space and park naturalization. 1CD (Ottawa), 1I (Waterloo)
43.	Urban forestry program. 1I (Ottawa 1990)
44.	Turf management program. 1I (Waterloo)
45.	Increased provision of downtown parking (to increase attraction of downtown core for shopping). 1I (Victoria)
46.	Environmental Assessment required of all City projects. 1A (Winnipeg 1978)
47.	PCB management program. 1I (Montreal)
48.	State of the environment report. 1CD (Ottawa)
<u>Administration</u>	
(Note: See City Offices, Waste Reduction/Recycling and Energy Management/Conservation tables for further details)	
49.	Creation of an "Environmental Approvals and Inspection Officer" position. 1I, 1I (1989)

#### 4.3 Parks and Recreation Departments

An interesting category of initiatives found in Parks and Recreation Departments but not in other departments is that of community stewardship and partnerships. Municipal experience with this type of initiative has generally been good. In some instances, the initiative may even cost more than programs without stewardship or partnerships, but it seems to result in enhanced program quality.

Table 5. SUD INITIATIVES IN PARKS/RECREATION DEPARTMENTS.	
<u>Policies/Programs/Projects</u>	
Pesticide/Chemical Control Reduction:	
1.	Pesticide reduction program. 1I (Guelph)
2.	Larvicide program. 3I (Regina, Winnipeg, Edmonton)
3.	Integrated pest management. 4I (Victoria, Vancouver, Edmonton, Kitchener)
4.	Pesticide right-to-know bylaw/policy. 1CD (Edmonton)



Table 5. SUD INITIATIVES IN PARKS/RECREATION DEPARTMENTS.	
<u>Policies/Programs/Projects</u>	
Pesticide/Chemical Control Reduction:	
5.	Use of organic fertilizers on turf areas. 1I (Kitchener)
6.	Tree injection process for application of chemicals and fertilizers. 1PP (Regina)
7.	Control of tent caterpillars manually rather than chemically. 1I (Waterloo)
8.	Use of biological and cultural controls in the City's conservatory. 1I (Winnipeg)
Energy Conservation/Alternative Transportation:	
9.	Promotion of transportation alternatives for City staff. 1I (Vancouver)
10.	Building energy efficiency improvements. 1I (Vancouver)
11.	Bicycle network master plan. 1I (Montreal)
12.	Encourage tour companies to use alternative fuels. 1I (Vancouver)
13.	Energy audits of Parks and Recreation facilities. 1I (Calgary)
14.	Bicycling/Pedestrian pathway system. 1I (Guelph)
Water Quality/Resources Management:	
15.	Water quality improvement program. 1OH (Montreal)
16.	Aquatic plant water filtration system. 1I (Montreal)
17.	Reduced mowing along water courses to promote cooler water temperatures, encourage revegetated stream banks and aquatic habitat, trap in-stream debris and sediment and reduce stream bank erosion. 1I (Waterloo)
18.	Use of drought-resistant plants and perennials in low maintenance areas. 1I (Kitchener)
19.	Stoop and Scoop bylaw. 1I (Calgary)
20.	Use of creek water or non-potable well water for irrigation rather than potable water. 1CD (Waterloo), 1I (Kitchener)
21.	Semi-arid landscaping. 1CD (Regina)
22.	Riverbank protection study. 1CD (Guelph)
23.	River Valley Management Plan. 1I (Edmonton 1990)
24.	Reduced fertilizer application on land adjacent to water courses. 1I (Regina)
Urban Parks:	
25.	Creation of a temporary Port-a-Park on vacant land in City core. 1I (Waterloo)
26.	Park expansion project. 1A (Montreal)
27.	Transformation of a landfill site into a park. 1I (Winnipeg)
Urban Forest Management:	
28.	Tree planting program. 4I (Edmonton, Regina, Winnipeg, Peterborough)
29.	Leaf composting/mulching program. 2I (Victoria, Kitchener)
30.	Street tree management plan. 1I (Vancouver)
31.	Pruning/tree chipping program. 1I (Regina)
32.	Urban Forestry Policy. 1CD (Ottawa), 1I (Quebec City)

Table 5. SUD INITIATIVES IN PARKS/RECREATION DEPARTMENTS.

## Cooperative Funding Projects/Community Stewardship:

33. Adopt-a-park program. 1I (Calgary 1983)
34. Private sponsorship program for tree planting. 1I (Regina 1991)
35. Community volunteer program for operation of Parks and Recreation programs. 1I (Kitchener)
36. Co-sponsorship of research studies with a non-profit agency. 1I (Calgary)
37. Private sponsorship of Parks and Recreation services and facilities. 1I (Guelph 1986)
38. Cooperative project with School Boards to construct Purple Martin birdhouses for mosquito control. 1I (Regina)
39. Community-based responsibility for identification and management of programs. 1I (Sherbrooke)
40. Cooperative tree planting and woodlot management projects with non-profit groups, business, university and community groups. 1I (Waterloo)
41. Cooperative project with local residents to naturalize a neighbourhood park. 1C (Waterloo)
42. Cooperative clean-up and enhancement projects with community organizations. 1I (Calgary, Waterloo)
43. Cooperative neighbourhood park development program. 1I (Edmonton)

## Other:

44. Multiple use building design program. 1I (Regina)
45. Encouragement of higher density land use in cemeteries. 1I (Regina)
46. Greenspace network master plan. 1I (Montreal)
47. Open space/river bank/park naturalization program. 3CD (Calgary, Kitchener, Guelph), 4I (Edmonton, Regina, Waterloo, Peterborough)
48. Environmental comments in Parks and Recreation Strategic Plan. 1I (Vancouver 1989)
49. Environmental audit of Parks and Recreation operations. 1I (Vancouver)
50. Expansion of existing community trail system. 1C (Waterloo)
51. Turf management program. 1I (Waterloo)
52. Pedestrian and bicycle networks. 1CD (Quebec City)
53. Land reserve acquisition program. 1I (Quebec City)

Administration

54. Establishment of an "Integrated Pest Management Coordinator" position. 1I (Vancouver)
55. Creation of a Citizen's Pesticide Advisory Task Force. 1I (Waterloo)
56. Establishment of an internal environmental advisory group. 2I (Regina, Kitchener)

**4.4 Public Health Departments**

Some of the most influential SUD initiatives have originated in municipal public health departments. For example, the first initiative undertaken by a municipality designed to address a purely global issue was Toronto's CFC bylaw. The first Environment Office and one of the few municipal State-of-the-Environment reports were also created by a public health department.

Table 6. SUD INITIATIVES IN HEALTH DEPARTMENTS.	
<u>Policies/Programs/Projects</u>	
Environmental Health:	
1.	CFC bylaw. 2I (Toronto 1989, Burnaby 1990)
2.	State of the Environment Report. 1I (Toronto 1988)
3.	Noise bylaw. 1I (Vancouver)
4.	Pesticide notification bylaw. 2I (Vancouver, Burnaby 1990)
5.	Water course contamination bylaw. 1I (Burnaby 1988)
6.	Household battery collection program. 1I (Burnaby, Toronto)
7.	Voluntary no-smoking policy. 1I (Dartmouth)
8.	No-smoking bylaw. 1I (Vancouver)
9.	Use of environmentally friendly alternatives to disposable medical equipment. 1CD (Vancouver)
General Public Health:	
10.	Wellness in the Workplace program. 1I (Edmonton)
11.	Community health monitoring program. 1I (Calgary)
12.	Healthy City program. 2I (Toronto 1989, Dartmouth 1987)
13.	Healthy City endorsement. 2C (Vancouver, Edmonton)
14.	"Heart a-la-carte" program for restaurants. 1I (Edmonton)
15.	Needle exchange program. 1I (Vancouver)
16.	AIDS policy for employees. 1I (Dartmouth)
17.	Children's hunger program. 1I (Regina)
18.	Community health knowledge training program. 1I (Calgary)
19.	Seniors' Wellness program. 1I (Vancouver)
20.	Promotion of community-based economic development in the inner city. 1I (Edmonton)
21.	Promotion of multi-cultural access to health. 1I (Edmonton)
22.	Coordination of community services with other communities. 1I (Edmonton)
23.	Identification of community health goals. 1CD (Edmonton)
24.	Infant nutrition counselling program. 1I (Vancouver)
25.	Child abuse prevention program. 1I (Vancouver)
26.	Community agency round table meetings. 1I (Vancouver)

#### 4.5 Social and Community Services Departments

Only a few social/community services departments were included in the survey and the number of initiatives identified is therefore relatively small. An interesting example of linkages between environmental and social programs can be found in Halifax. The City's cloth diaper program reduces the cost of diapers for single mothers on social assistance and provides environmental benefits by avoiding the purchase of disposable diapers and reducing waste. The program also provides other social benefits because the diapers are manufactured by employees of a City-subsidized employment and training business.

Table 7. SUD INITIATIVES IN SOCIAL/COMMUNITY SERVICES DEPARTMENTS	
1.	Nutrition program for low income families. 1I (Halifax)
2.	Cloth diaper program. 1PP (Halifax)
3.	Work training program. 1I (Halifax 1978)
4.	Social development policy. 1CD (Winnipeg)
5.	Business community education program on the benefits of social programs. 1I (Edmonton)
6.	Citizens' advisory committees for community and family services. 1I (Edmonton)

#### 4.6 Corporate Initiatives

Several municipalities have discovered that it is difficult to deal with environmental issues on a department-by-department basis. Those municipalities have already developed or are currently designing corporate strategies for the environment and they also tend to have created inter-departmental coordinating committees on the environment. Two municipalities currently require that departments comment on the environmental implications (along with the budgetary implications) of every report they submit to council.

Corporate strategies on the environment have emerged as an important tool for ensuring that a municipality's operations are environmentally sound before attempting to encourage similar practices within the community. The strategy typically consists of a set of policies for reducing the environmental impact of existing and future municipal activities in such areas as waste reduction, energy conservation, water conservation, environmentally friendly purchasing and pollution control.

Some municipalities have broadened the scope of their strategies so that they cover not only municipal government activities but also those in the general community. A sample of the types of initiatives being considered in these broader strategies includes: municipal environmental evaluation for land use planning and development activity (Kitchener, Ottawa), conservation credits for new buildings (Guelph), residential densification/intensification (Kitchener, Guelph) and natural area conservation (Kitchener). Some municipalities have also adopted mission statements on the environment as part of their corporate strategies. For example, Kitchener's proposed mission statement calls for the City of Kitchener to:

"Ensure an environment that is ecologically sound and responsive to health, safety and well-being of its residents by identifying and implementing policies and practices which impact positively on the environment" (City of Kitchener 1991).

Table 8. CORPORATE SUD INITIATIVES.	
1.	Corporate strategy on the environment. 6CD ( <u>Calgary</u> , <u>Kitchener</u> , <u>Guelph</u> , <u>Toronto</u> , <u>Ottawa</u> , <u>St. John's</u> )
2.	Environmental comments in all reports to council. 2I ( <u>Calgary</u> 1990, <u>Regina</u> 1990)
3.	Annual report/newsletter on environmental issues. 2I ( <u>Winnipeg</u> , <u>Waterloo</u> )
4.	CO2 reduction program. 1CD ( <u>Regina</u> ), 1I ( <u>Toronto</u> 1988)
5.	Air quality improvement program. 1I ( <u>Vancouver</u> 1990)
6.	Environmental review/audit of City operations. 1CD ( <u>Winnipeg</u> )
7.	Strategic plan to identify a political agenda for the environment. 1I ( <u>Calgary</u> )
8.	Environmental criteria established for the evaluation of capital projects. 1I ( <u>Montreal</u> 1989)
9.	Twinning project with an American city over the issue of acid rain. 1I ( <u>Montreal</u> )
10.	Identification of existing provincial legislation which legally protects employees who speak out on environmental concerns. 1C ( <u>Waterloo</u> )
11.	Community environmental grant program. 1I ( <u>Vancouver</u> 1991)
12.	Member of the "Keep America Beautiful" campaign. 1I ( <u>Winnipeg</u> )
13.	Municipal environmental evaluation process. 1CD ( <u>Ottawa</u> )
14.	SUD statements in long range (30 year) planning documents. 1I ( <u>Calgary</u> )
15.	CFC policy. 1CD ( <u>Edmonton</u> ), 1I ( <u>Winnipeg</u> )

#### 4.7 City Government Offices

The most significant trend in changing administrative structures over the past year and a half, has been the creation of nine Environment Offices or Environmental Coordinator positions in Canadian municipalities. Most of the Offices and Coordinators operate out of existing departments, while others report directly to the chief administrative officer. One of the most common roles of an Environment Office is to coordinate environmental initiatives among departments. Staff in some Environment Offices are also being asked to prepare corporate environmental strategies, to establish environmental assessment guidelines for internal and external projects, to liaise with the public on environmental matters, and to undertake research on specific environmental issues.

Table 9. CITY GOVERNMENT OFFICES	
1.	Office of the Environment/Environmental Coordinator. 1OH ( <u>Winnipeg</u> ), 9I ( <u>Toronto</u> 1987, <u>Vancouver</u> 1990, <u>Edmonton</u> 1990, <u>Calgary</u> 1990, <u>Waterloo</u> 1990, <u>Ottawa</u> 1990, <u>Sherbrooke</u> 1990, <u>Quebec City</u> 1991, <u>St. John's</u> 1990)
2.	Energy Efficiency/Management Office. 1I ( <u>Halifax</u> 1985), 1I ( <u>Toronto</u> 1991)
3.	Healthy City Office. 1I ( <u>Toronto</u> 1989)

#### 4.8 Inter-departmental Committees

The recent establishment of inter-departmental coordinating committees on the environment in three municipalities illustrates a trend for the creation of administrative structures which transcend traditional departmental boundaries. Some committees have been established on a permanent basis while others have been appointed for limited

terms to deal with specific issues. The permanent committees are typically staffed by senior representatives from all departments with responsibility for coordinating multi-department responses to environmental issues and acting as a communications network for exchanging ideas and information among departments. The reporting structure of these committees varies. Toronto's Interdepartmental Coordinating Committee on the Environment reports to a special sub-committee of the Department Heads' Committee that has responsibility for environmental issues. Calgary's Interdepartmental Environmental Committee reports to the City Engineer while Montreal's Coordinating Committee on the Environment reported to the City Manager before its abolition in 1991.

Table 10. INTER-DEPARTMENTAL COMMITTEES	
Permanent Committees:	
1.	Energy management committee. 1l ( <u>Edmonton</u> 1981)
2.	Environmental coordinating/policy committee. 3l ( <u>Calgary</u> 1990, <u>Toronto</u> 1990, <u>Montreal</u> 1988)
3.	Environmental products committee. 1l ( <u>Calgary</u> 1989)
4.	Advisory committee on ozone depleting substances. 1l ( <u>Winnipeg</u> 1990)
5.	Department Heads' Environmental Committee. 1l (Toronto)
Limited Term Committees/Task Forces:	
6.	Environmental policy committee. 1l ( <u>Waterloo</u> 1990)
7.	Corporate strategy on the environment study group/task force. 2l ( <u>Edmonton</u> 1990, <u>Kitchener</u> 1990)
8.	Working group on traffic calming and vehicle emissions. 1l ( <u>Toronto</u> 1990)

#### 4.9 Citizens' Advisory Committees

Nine municipalities were found to have environment-related advisory committees, normally composed of members of the public with environmental expertise or representing specific interests or community groups. The functions of these committees range from advising and preparing policy papers on specific issues (e.g. CO<sub>2</sub> reduction) to responding or becoming proactive on a wide range of environmental issues. Some committees have significant support services and budgets provided to them while others do not. With the exception of one committee where honoraria are provided, members of these committees all volunteer their time.

Three of the most innovative policy documents on planning for sustainable communities have originated with citizens' advisory committees in the cities of Toronto (Special Advisory Committee on the Environment 1989 and 1991), Vancouver (Task Force on Atmospheric Change 1990) and Peterborough (Task Force on Sustainable Development for the Peterborough Area 1991). Most of the recommendations embodied in the first two reports have already been or are currently being implemented by the respective local governments. It is too early to say how many of the Peterborough Task Force's recommendations will be implemented. The recommendations in all three reports are far-reaching, ranging from calls for the establishment of new administrative bodies

responsible for energy and the environment to the introduction of policies for reducing reliance on the car.

Table 11. CITIZENS' ADVISORY COMMITTEES

Environmental Committees:

1. General environmental advisory committee. 2I (Regina 1988, Kitchener 1991, Ottawa 1979)
2. Environmental advisory committee on air quality. 2I (Vancouver 1989, Toronto 1988)
3. Environmental advisory committee on new development applications. 1I (St. John's 1988)
4. Environment and waste management committee. 1I (Burnaby 1988)
5. Round table on the environment. 2UC (Calgary, St. John's), 1I (Peterborough 1988)
6. Recycling advisory committee. 2I (Waterloo, Toronto 1974)
7. Bicycling advisory committee. 2I (Vancouver, Toronto)
8. Healthy communities advisory committee. 1I (Dartmouth 1989)
9. Water pollution advisory committee. 1I (Toronto)
10. River basin management advisory committee. 1I (Toronto)

Social Services Committees:

11. Community and family services advisory committee. 1I (Edmonton 1984)

#### 4.10 Energy Management/Conservation Initiatives

One of the earliest and most widely adopted initiatives undertaken by Public Works departments has been energy management. Most of the formal energy management programs found in the municipalities surveyed began during the early 1980s in response to the energy crisis and high energy prices. The original motivation for this initiative was therefore economic in most cases, but a few respondents indicated that environment has also become an important driving force behind current energy management and conservation initiatives. The most recently established energy management program, for the City of Toronto, appears to have been entirely motivated by concern for the harm caused to the air environment by energy production and consumption. Although only 8 of 22 municipalities identified their energy management programs as SUD initiatives, other municipalities may have their own energy management programs but did not identify them because they have become common practice.

Table 12. ENERGY MANAGEMENT/CONSERVATION INITIATIVES.

Programs/Policies/Projects

Transportation:

1. Anti-idling policy for City vehicles. 2I (Calgary, Kitchener)
2. Use of a tanker to fuel City vehicles on-site rather than at a stationary island. 1I (Kitchener)
3. Fuel conversion of some city vehicles to propane. 5I (Calgary, Kitchener, Waterloo, Peterborough, Ottawa)
4. Fuel conversion of some city vehicles to natural gas. 5I (Calgary, Kitchener, Waterloo, Toronto, Ottawa)

Table 12. ENERGY MANAGEMENT/CONSERVATION INITIATIVES.	
5.	Fuel conversion of some city vehicles to methanol. 1I (Calgary)
6.	Purchase of an electric-powered van. 1I (Toronto)
7.	Increased reliance on electric-powered public transit. 1I (Calgary)
8.	Purchase of down-sized vehicles. 1I (Regina)
9.	Parking lot timers. 3I (Calgary, Winnipeg, Kitchener)
<b>Heating and Cooling:</b>	
10.	Infra-red heating system in transit garages that warms objects instead of the air. 1I (Kitchener)
11.	Thermostat timers and setbacks. 1I (Winnipeg)
12.	Hot water temperature reduction. 1I (Kitchener)
13.	Solar heating for City pools. 1I (Kitchener)
14.	Solar heating in City buildings. 1C (Ottawa)
15.	Increased building insulation. 3I (Winnipeg, Kitchener, Ottawa)
16.	Increased water tank insulation. 1I (Kitchener)
17.	Use of swimming pool covers. 1I (Kitchener)
18.	Waste heat recovery. 6I (Calgary, Regina, Winnipeg, Kitchener, Waterloo, Ottawa)
19.	Ventilation system and electric hot water heater shutdowns in low use periods. 1I (Winnipeg)
20.	Storm window installation. 1I (Kitchener)
21.	Garage door insulation/low air leakage garage doors. 1I (Kitchener)
22.	Automatic door closers. 1I (Kitchener)
23.	Low water use bathroom/shower fixtures. 4I (Winnipeg, Kitchener, Waterloo, Ottawa)
24.	Ceiling fans. 1I (Kitchener)
25.	High efficiency furnaces. 1CD (Kitchener)
26.	High efficiency boilers. 2I (Regina, Winnipeg)
27.	Replacement of electric heaters with natural gas heaters. 1I (Winnipeg)
28.	High insulation windows. 1I (Kitchener)
29.	Low emissivity ceilings. 3I (Regina, Winnipeg, Waterloo)
<b>Lighting:</b>	
30.	High efficiency indoor lighting. 4I (Winnipeg, Kitchener, Waterloo, Ottawa)
31.	High efficiency outdoor/street lighting. 7I (Vancouver, Calgary, Regina, Kitchener, Ottawa, Montreal, Halifax)
32.	Outdoor light timers. 1I (Regina)
33.	Reduced wattage in traffic lights. 1I (Halifax)
34.	Occupancy sensors. 1CD (Kitchener), 1I (Regina)
<b>Other:</b>	
35.	Energy audits. 1I (Winnipeg)
36.	Energy efficient computers. 1I (Regina)
37.	Solar energy subdivision guidelines. 1CD (Winnipeg), 1I (Regina)
38.	City employee public education program/energy conservation newsletter. 1I (Sherbrooke)
39.	Co-generation. 1CD (Kitchener), 1I (Calgary)
40.	Automated building controls. 1CD (Kitchener), 2I (Ottawa, Sherbrooke)
41.	Energy investment program. 1I (Regina)
42.	Energy management control systems. 3I (Winnipeg, Kitchener, Halifax)
43.	Energy conservation standards/guidelines for new buildings. 2I (Winnipeg, Ottawa)



Table 12. ENERGY MANAGEMENT/CONSERVATION INITIATIVES.

Administration

- |     |  |
|-----|--|
| 44. | Energy Auditor/Manager/Coordinator position. 3I (Regina 1989, Winnipeg 1984, Kitchener 1980) |
| 45. | Energy Management/Efficiency Office. I (1985) 1I (1991) xxxxx                                |
| 46. | Interdepartmental Energy Management Committee. 1I (Edmonton 1981)                            |
| 47. | Citizen liaison committee. 1CD (Winnipeg)  |

**4.11 Waste Recycling/Reduction Initiatives**

More waste management initiatives were identified than any other type encountered in the survey. A total of 81 different initiatives is almost double the number of energy management and conservation initiatives. The two most frequent motivations behind waste reduction and recycling initiatives are the existence of a local landfill crisis and demands from the public that the municipality provide recycling services so that residents can contribute to environmental improvements. Although the initial focus of municipal recycling programs was the residential sector, most municipalities have now expanded their attentions to the industrial/commercial/institutional (ICI) sector as well since that sector can contribute up to 60% of a municipality's total waste. The most popular program among the municipalities surveyed is Blue Box or Blue Bag curbside recycling.

The "3R" waste management hierarchy states that Reduction initiatives should be pursued before Reuse initiatives which, in turn should precede Recycling initiatives. The reason that Table 13 has so many recycling initiatives relative to the other two "R's" is that it is more difficult for municipalities to affect reduction or reuse behaviour than recycling behaviour. For example, packaging makes up almost 30% of the municipal waste stream yet its use is currently regulated by the federal and provincial governments. Municipalities have very little power to reduce packaging directly, although Toronto is currently exploring the possibility of creating a local packaging bylaw. A factor that should be borne in mind when reading Table 13 is that some municipalities have full responsibility for the collection and disposal of their wastes while others are only responsible for collection. Thus, some municipalities would not become involved in initiatives that relate to waste disposal, such as material bans at landfill sites.

Table 13. WASTE REDUCTION/RECYCLING INITIATIVES.

Residential Recycling:

- |    |  |
|----|--|
| 1. | Blue box residential recycling. 4PP (Calgary, Winnipeg, Sherbrooke, Quebec City), 8I (Vancouver, Edmonton, Kitchener, Guelph, Toronto, Peterborough, Montreal) |
| 2. | Blue bag residential recycling. 1PP, 1I (Halifax)  |

Table 13. WASTE REDUCTION/RECYCLING INITIATIVES.

## Programs/Policies/Projects

3. Backyard composting. 2PP (Vancouver, Montreal), 7I (Regina, Winnipeg, Kitchener, Waterloo, Guelph, Ottawa)
  4. Curbside leaf collection. 8I (Vancouver, Waterloo, Guelph, Toronto, Peterborough, Ottawa, Montreal, Quebec City)
  5. Apartment recycling. 2PP (Vancouver, Edmonton), 5I (Kitchener, Waterloo, Toronto, Peterborough, Ottawa)
  6. Christmas tree recycling. 8I (Edmonton, Calgary, Regina, Winnipeg, Kitchener, Waterloo, Toronto, Peterborough)
  7. Green box residential recycling at depots. 1PP (Calgary)
  8. Used clothing curbside collection. 1PP (Ottawa)
  9. Mixed paper residential recycling. 1CD (Regina)
  10. Recycling depots. 4I (Vancouver, Winnipeg, Waterloo, Toronto)
  11. Garbage give-away day. 2I (Waterloo, Ottawa)
  12. Used oil recycling depots. 1I (Regina)
  13. Community newsletter on waste management/recycling issues. 2I (Guelph, Ottawa)
  14. Household hazardous waste days/depots. 7I (Vancouver, Edmonton, Regina, Guelph, Toronto, Peterborough, Montreal)
  15. Small appliance and metal goods curbside collection. 1UC (Ottawa)
  16. White goods curbside collection. 1UC (Ottawa), 3I (Guelph, Toronto, Peterborough)
  17. Recycling of white goods delivered to landfill. 1I (Calgary)
  18. Recycling of automotive batteries delivered to landfill. 1I (Calgary)
  19. Wet/dry curbside collection. 1CD (Toronto), 1PP (Guelph)
  20. Construction of a wet/dry processing facility. 1CD (Guelph)
  21. Construction of a municipal composting plant. 2CD (Edmonton, Peterborough)
  22. Construction of a materials recovery facility. 2CD (Sherbrooke, Quebec City), 1I (Peterborough)
  23. Fine paper recycling depots. 1I (Ottawa)
  24. Mandatory source-separation bylaws. 1UC (Toronto)
  25. Composting in multi-unit dwellings. 1PP (Waterloo)
- Industrial/Commercial/Institutional Recycling:
26. Asphalt recycling. 3I (Regina, Winnipeg, Kitchener)
  27. Office paper recycling at City offices. 1CD (Winnipeg), 5I (Vancouver, Calgary, Regina, Kitchener, Ottawa)
  28. Blue box recycling at City offices. 1I (Waterloo)
  29. Blue box recycling in schools and other institutions. 1UC (Ottawa), 1PP (Edmonton), 2I
  30. Blue box recycling for industry. 1UC (Ottawa), 1I (Guelph)(Guelph, Toronto)
  31. Blue box recycling in restaurants and taverns. 1PP (Toronto)
  32. Recycling bins in parks and/or on streets. 2I (Guelph, Toronto)
  33. Blue box recycling in retail establishments. 1I (Toronto)
  34. Curbside collection of commercial corrugated cardboard. 1UC (Charlottetown), 5I (Edmonton, Waterloo, Guelph, Toronto, Ottawa)
  35. Curbside collection of commercial plastics. 1I (Edmonton)
  36. Closed loop fine paper recycling in schools. 1I (Peterborough)
  37. Hotel recycling. 2PP (Toronto, Ottawa)
  38. Office paper recycling guide. 1CD (Vancouver), 2I (Toronto, Ottawa)

Table 13. WASTE REDUCTION/RECYCLING INITIATIVES.

39. Recycling depot in industrial zone. 1I (Whitehorse)
40. Recycling of waste oil from City operations. 3I (Calgary, Winnipeg, Waterloo)
41. Recycling of unchlorinated waste solvents from City operations. 1I (Winnipeg)
42. Reuse/Recycling directory. 1CD (Ottawa)
43. Recycled paper content requirements for newspapers sold on City streets. 1I (Toronto)
44. Recycling of casket hardware from crematoriums. 1I (Waterloo)
45. Recycling of batteries, photocopy cartridges, kerosene and antifreeze from City operations. 1I (Calgary)
46. Subsidized office paper recycling program for businesses. 1I (Edmonton)
47. Recycling of tires delivered to landfill. 1CD (Vancouver)
48. Commercial fruit and vegetable waste collection program. 1I (Quebec City)

## Industrial/Commercial/Institutional Reuse:

49. Waste exchange advisory service for industry/business. 1I (Calgary)
50. Reclamation of reusable lumber at City's dry disposal site. 1I (Calgary)
51. Reclamation of reusable wood and steel from discarded mattresses and box springs delivered to landfill site. 2I (Vancouver, Calgary)
52. Reuse of propane cylinders delivered to landfill. 1I (Calgary)
53. Recapping/retreading of tires on City vehicles. 2I (Calgary, Waterloo)
54. Reuse of aluminum and steel sign blanks. 1I (Kitchener)
55. Reuse of old city hard hats. 1I (Calgary)
56. Mixing of crushed glass from blue box program with excavated material for use as backfill. 1CD (Toronto)
57. Mixing of crushed glass from blue box/recycling depot program with asphalt to form "glasphalt" paving material. 1I (Whitehorse)
58. Promotional campaign for refillable soft drink containers. 1I (Ottawa)
59. Bylaw requiring the use of reusable dishes and tableware in restaurants. 1UC (Toronto)
60. Paint drums returned to supplier for refill. 1I (Kitchener)

## Reduction:

61. "No junk mail" campaign/restrictions/stickers. 1CD (Toronto), 2I (Guelph, Ottawa)
62. Packaging bylaw. 1CD (Toronto)
63. Reduced use of anti-freeze in City vehicles. 1I (Kitchener)
64. Increased interval length between City vehicle oil changes. 1I (Kitchener)
65. Increased tipping fee at landfill sites. 2I (Winnipeg, Peterborough)
66. Garbage container setout restrictions. 2I (Peterborough, Ottawa [voluntary "Single Container Week"])
67. Material bans at landfill. 1CD (Peterborough)
68. Household user pay system for waste disposal. 1CD (Peterborough)
69. Surcharge on tire disposal at landfill. 1I (Edmonton)
70. Increase in bulk purchases. 1I (Kitchener)
71. Public education campaign for waste reduction/recycling. 2I (Winnipeg, Ottawa)
72. Waste reduction education campaign in schools. 2I (Edmonton, Toronto)

Table 13. WASTE REDUCTION/RECYCLING INITIATIVES.

Other:

- 74. Domestic waste composition study. 1I (Montreal)
- 75. Industrial/Commercial/Institutional waste composition study. 1I (Peterborough, Montreal)
- 76. Construction of a refuse-derived fuel plant. 1CD (Edmonton)
- 77. Waste audit of City Hall. 2I (Edmonton, Ottawa)
- 78. Waste audits for business/industry. 2I (Edmonton, Guelph)
- 73. Use of standardized containers for domestic waste set-outs. 1PP (Montreal)

- 79. CFC recovery program from freezers/refrigerators delivered to landfills/transfer stations. 1PP (Vancouver)
- 80. Temporary storage of recyclables at landfill until markets develop. 2I (Calgary, Peterborough)
- 81. Preparation of a Waste Management Master Plan. 2I (Guelph, Montreal)
- 82. Recycled materials market study. 1I (Montreal)
- 83. Mapping of illegal dump sites. 1I (Montreal)
- 84. Recovery and sale of sewage sludge. 1CD (Sherbrooke)
- 85. Methane recovery at landfill site. 1CD (Vancouver)
- 86. PCB removal program for affected fluorescent lights. 1I (Calgary)

Administration

- 87. Citizens' Recycling Advisory Committee. 1CD (Vancouver), 1I (Toronto)
- 88. Creation of "Waste Reduction/Recycling Coordinator" positions. 2CD (Regina, Winnipeg), 2I (Waterloo 1990, Peterborough 1989)
- 89. Creation of Waste Reduction/Recycling Offices. 2I (Peterborough, Toronto)

**4.12 Environmentally Friendly Purchasing Policies**

The environmentally friendly purchasing policies described in Table 14 include employee education, waste reuse, use of recycled materials, and avoidance of chemical-based liquids. The significant aspect of municipal purchasing policies is that a strong network has been established among municipal purchasing managers to exchange ideas and experiences with new products. This network, known as ACCESS (Association of Canadian Cities for Environmentally Sound Strategies) holds annual meetings and has published two manuals on environmentally friendly products and markets.

Table 14. ENVIRONMENTALLY FRIENDLY PURCHASING POLICIES.

Policies

- 1. Use of photocopy paper, envelopes, bond paper, paper towels, toilet tissues, file folders made of recycled paper. 4I (Waterloo, Toronto, Sherbrooke, Quebec City)
- 2. Use of re-refined oils. 1I (Toronto)
- 3. Use of recycled plastic in road signs. 1CD (Toronto)
- 4. Newsletter for City employees on environmentally friendly purchasing policies. 1I (Toronto)

Table 14. ENVIRONMENTALLY FRIENDLY PURCHASING POLICIES.

- |     |   |
|-----|---|
| 5.  | Use of refurbished computer printer cartridge and photocopying machine cylinders. 2I (Regina, Toronto)  |
| 6.  | Use of double-sided photocopying. 3I (Calgary, Waterloo, Toronto)                                       |
| 7.  | Reduced indoor lighting intensity. 1I (Regina)  |
| 8.  | Use of canola based rather than petroleum based inks. 1I (Regina)                                       |
| 9.  | Use of non-chemical based cleaners. 1I (Regina)   |
| 10. | Use of cruelty-free products. 1CD (Toronto)   |
| 11. | Ban on the use of City products containing exotic hardwoods. 1I (Calgary)                               |
| 12. | Use of phosphate-free/biodegradable cleaning products. 3I (Waterloo, Toronto, Quebec City)              |
| 13. | Use of washable/recyclable towels in City Hall washrooms. 1PP (Calgary)                                 |
| 14. | Acceleration of vehicle replacements, resulting in increased fleet fuel efficiency. 1I (Calgary)        |
| 15. | Use of a tailpipe emission analyzer for City vehicle tune-ups. 1I (Toronto)                             |
| 16. | Use of generic folders made from recycled paper for City documents. 1I (Toronto)                        |
| 17. | Use of standardized returnable cartons rather than shrink-wrapping for document packaging. 1I (Toronto) |
| 18. | Use of re-inked printing ribbons. 1I (Quebec City)  |
| 19. | Use of long-life light bulbs. 1UC (Quebec City)   |

Administration

- |     |  |
|-----|--|
| 20. | Membership in local purchasing network. 1I (Ottawa)  |
| 21. | Membership in regional purchasing network. 1I (Toronto)  |
| 22. | Membership in national purchasing association. 11I (Victoria, Vancouver, Calgary, Edmonton, Regina, Winnipeg, Toronto, Ottawa, Montreal, Fredericton, Halifax) |
| 23. | Establishment of an internal Paper Reduction Committee. 1I (Toronto)   |
| 24. | Establishment of an inter-departmental Environmental Products Committee. 1I (Calgary 1989)   |

**4.13 SUD Statements in Official Plans**

Municipalities reviewing their Official Plans have encountered considerable public pressure to incorporate sustainable development principles into their revised plans. For example, in Ottawa, most of the public comments received on a first draft of the Official Plan called for increased emphasis on environmental issues. A sample of some of the responses found in current Official Plans (proposed and approved) is provided in Table 15. Only Guelph and Edmonton have had the proposals presented in Table 15 approved. The Official Plans for all of the other municipalities identified in the table are still in the conceptual design, draft or public consultation stage.

Some of the key new elements being introduced into Official Plans include objectives and policies for: undertaking municipal environmental evaluations/assessments, achieving compact urban form, reducing reliance on the car, creating environmental performance standards, rehabilitating hazardous industrial lands, protecting environmentally sensitive areas, providing affordable housing and managing air quality,

water quality, and wastes. The trend towards expanding the scope of Official Plans beyond their traditional role as land use planning documents is in accordance with the claim by Doering *et al.* (1991) that planning for sustainability "... requires taking a holistic view of planning for human activities, beyond the traditional focus of land use, and in the context of the whole ecosystem" (Doering *et al.* 1991: 102).

Table 15. SUD STATEMENTS AND POLICIES IN OFFICIAL PLANS.	
Affordable Housing:	
1.	Permit basement apartments in single family dwellings. (Fredericton)
2.	Make city-owned land available for affordable housing. (Fredericton)
3.	Establish a housing-employment linkage fee on all new commercial development. (Toronto)
4.	Require private market housing developments to contribute toward the provision of affordable housing. (Toronto)
5.	Require at least 50% of new housing on redesignated residential lands to be affordable. (Toronto)
6.	Require at least 25% of units in new residential developments to be affordable and target 25% of the aggregate total of new annual residential construction in the city as affordable. (Ottawa)
Compact Urban Form:	
7.	Develop housing intensification policies. (Toronto)
8.	Discourage leap frog development. (Regina)
9.	Reduce the proportion of development dedicated to roads through efficient subdivision design. (Regina)
10.	Promote infill (Edmonton, Regina, Toronto, Fredericton)
11.	Promote rehabilitation. (Regina, Toronto)
12.	Promote conversion. (Toronto)
13.	Consider the reduction of minimum lot sizes. (Fredericton)
14.	Encourage the addition of residential units on the city's "Main Streets". (Toronto)
Energy Conservation:	
15.	Ensure solar access for new residential developments. (Regina, Ottawa)
16.	Ensure that new developments facilitate energy efficiency. (Toronto, Fredericton)
17.	Encourage the retrofitting of existing buildings to incorporate energy efficient measures. (Toronto)
Hazards:	
18.	Ensure that developments which store hazardous materials do not contaminate the city's aquifer. (Regina)
19.	Ensure that reuse of former industrial sites will not result in health risks due to contamination. (Toronto, Fredericton)
20.	Encourage hazardous waste generators to prepare waste audits and waste reduction plans by 2001. (Toronto)
21.	Specify separation distances from major power transmission lines. (Fredericton)
Waste Management:	
22.	Consider establishing a residential waste composting program. (Regina)
23.	Implement a public education waste reduction campaign. (Regina)
24.	Promote recycling. (Fredericton)

Table 15. SUD STATEMENTS AND POLICIES IN OFFICIAL PLANS.	
25.	Develop a Solid Waste Management Plan that encourages reduction, reuse and recycling. (Regina)
26.	Encourage the development of markets for recycled materials. (Regina, Fredericton)
27.	Reduce waste by 50% of 1991 levels by 2001. (Toronto)
<b>Chemical Controls:</b>	
28.	Consider strategies to decrease use of pesticides, herbicides and chemical fertilizers. (Regina)
29.	Reduce the use of manufactured chemical pesticides within the city by 50% of 1991 levels by 2001. (Toronto)
<b>Reliance on the Car:</b>	
30.	Encourage commercial developments that facilitate combined trips to a single destination. (Regina)
31.	Encourage high density developments close to places of employment. (Regina)
32.	Promote pedestrian and bicycle networks and facilities. (Edmonton, Toronto, Ottawa, Fredericton)
33.	Require bicycle facilities as a condition of approval for new developments. (Toronto, Ottawa, Fredericton)
<b>Reliance on the Car:</b>	
34.	Encourage high density residential/commercial development at transportation and commercial activity nodes. (Edmonton)
35.	Encourage commuting alternatives for city employees, including flexible working hours, home-based computer networking and compensation for the use of non-auto trips for city business. (Ottawa)
36.	Promote ride-sharing (Toronto, Ottawa), park-and-ride facilities for automobiles and bicycles (Ottawa), reserved lands for high occupancy vehicles, and preferential parking arrangements for high occupancy vehicles (Toronto, Ottawa).
37.	Promote public transit, including reserved transit lanes and priority for transit vehicles at traffic signals. (Toronto)
<b>Municipal Environmental Evaluations/Assessments:</b>	
38.	Require municipal environmental evaluation for all developments with potential environmental impacts (Ottawa), for developments impacting an environmentally sensitive areas (Edmonton, Guelph, Toronto, Ottawa), sites with potential soil contamination (Ottawa), abandoned pit and quarry sites (Ottawa), unstable slopes (Ottawa), waste management facilities (Ottawa), snow disposal sites (Ottawa), river valleys and ravines (Edmonton), for residential developments (Fredericton).
39.	Require transportation impact assessments for new residential developments. (Fredericton)
<b>Environmentally Sensitive Areas:</b>	
40.	Designate and protect environmentally sensitive areas. (Edmonton, Guelph, Toronto, Fredericton)

Table 15. SUD STATEMENTS AND POLICIES IN OFFICIAL PLANS.	
Performance Standards:	
41.	Establish performance standards for new developments related to: vehicle reduction (Toronto), bicycle parking (Fredericton), contaminant and pollutant emission reduction (Regina, Toronto), waste management (Toronto), energy conservation (Toronto), storm water management (Toronto), water conservation (Toronto), noise minimization (Regina, Toronto), indoor air quality (Toronto), pedestrian comfort (Toronto), environmental management of construction and demolition (Toronto), surface water contamination (Regina), visual impacts (Regina), fire and explosion hazards (Regina), odours (Regina), remediation and disposal of contaminated soil (Toronto), and flood management and control (Toronto).
Air Quality:	
42.	Discourage the location of industries in the city that can have a negative impact on air quality. (Fredericton)
43.	Reduce carbon monoxide, hydrocarbon and oxides of nitrogen emissions by 20% of 1991 levels by 2006. (Toronto)
44.	Reduce sulphur dioxide and nitrogen dioxide emissions by 25% of 1991 levels by 2006. (Toronto)
45.	Reduce carbon dioxide emissions by 20% of the 1991 levels by the year 2006. (Toronto)
46.	Establish a monitoring and regulatory system to control tail pipe emissions. (Ottawa)
Water Quality and Conservation:	
47.	Protect the city's drinking water sources. (Edmonton)
48.	Site snow removal dump sites away from main water courses. (Fredericton)
49.	Implement storm water management practices. (Fredericton)
50.	Rehabilitate a major water course in the city to its natural form, function and habitat. (Toronto)
51.	Reduce water consumption by 10% on a per capita basis of 1991 levels by 2001. (Toronto)
52.	Eliminate beach closures by the year 2001. (Toronto)
53.	Require master drainage plans and storm water design plans for new developments. (Ottawa)
Urban Encroachment:	
54.	Protect sand and gravel deposits from urban encroachment. (Edmonton)
55.	Protect agricultural land from urban encroachment. (Edmonton)
Other:	
56.	Adopt SUD as the basis upon which the City will manage the future. (Ottawa)
57.	Promote the Healthy Community concept in urban design. (Edmonton, Fredericton)
58.	Establish an Ecological and Environmental Advisory Committee. (Toronto)
59.	Promote tree planting and preservation of existing trees. (Toronto, Ottawa)
60.	Require large developments to allocate 1% of development costs to public art. (Toronto)
61.	Establish a Greenway system throughout the city. (Ottawa)

#### 4.14 Thinking Globally, Acting Locally

Canadian municipalities have taken a leading role in devising programs and policies that address global environmental concerns. Much of the activity to date has



involved local actions to reduce depletion of the ozone layer by reducing corporate and community chlorofluorocarbon (CFC) emissions and actions to reduce the threat of global warming by reducing corporate and community carbon dioxide (CO<sub>2</sub>) emissions.

Toronto's comprehensive 1989 CFC bylaw placed restrictions on the sale, manufacture, distribution, installation, repair, servicing and disposal of CFC-containing products. In response to the introduction of federal and provincial regulations on CFCs between 1989 and 1990, the city revised its bylaw to cover repair, maintenance and disposal activities only. Toronto has since purchased refrigerant recovery equipment and implemented a trial program for the recovery of refrigerant from discarded household refrigerators and freezers collected by the city's sanitation crews. The results of the program have been disappointing and the city now intends to concentrate on the recovery of insulation material rather than refrigerant.

Only a few of the municipalities surveyed have followed Toronto's lead in enacting CFC bylaws. Vancouver is proposing to phase out use of ozone depleting chemicals within the city by 1995 and is preparing a bylaw to ban the use, sale and manufacture of CFCs. In 1989, Burnaby investigated the possibility of adopting Toronto's original CFC bylaw but found it to be too broad. The municipality subsequently enacted a bylaw restricting repair, maintenance, and disposal operations only. Winnipeg decided not to create a bylaw similar to Toronto's but wait for the impact of proposed provincial CFC regulations. Winnipeg now has a CFC policy for corporate activities and plans to implement a pilot CFC recovery project similar to Toronto's. Ottawa also considered adoption of a CFC bylaw. However, the city was unable to find enabling legislation to support a version of Toronto's 1989 bylaw and decided that it would be more appropriate for the regional government to undertake such an initiative. The region did not take action, claiming that federal policy was sufficient. Ottawa has since established a corporate policy for the purchase and management of products containing CFCs. Calgary and Edmonton are currently preparing CFC policies and Montreal is designing a CFC recovery pilot project.

The impetus for local action on global warming was an international conference held in Toronto in June, 1988 on "The Changing Atmosphere: Implications for Global Security." The conference addressed the problems of local, regional and global atmospheric pollution, including acid rain, stratospheric ozone depletion and global warming. One of the recommendations produced by conference participants was for governments to reduce carbon dioxide (CO<sub>2</sub>) emissions by approximately 20% of 1988 levels by the year 2005. A City of Toronto Councillor who attended the conference subsequently urged Toronto City Council to take local action on the issue. As a result, the City established a Special Advisory Committee to investigate the problem and has since implemented most of the recommendations arising from that Committee's first report to Council in 1989. Council adopted the 1988 Changing Atmosphere Conference objective for CO<sub>2</sub> reduction and has implemented or is currently investigating a number of initiatives to achieve this objective. The initiatives not only include methods to reduce

local CO<sub>2</sub> emissions but also those which encourage carbon emissions recycling, such as local tree planting programs and the financing of reforestation in Central America (City of Toronto Special Advisory Committee on the Environment 1989).

Vancouver followed Toronto's lead by including an identical CO<sub>2</sub> reduction goal in its 1990 air quality improvement policy (City of Vancouver Task Force on Atmospheric Change 1990). Although the CO<sub>2</sub> goal is identical, the policy itself differs from Toronto's in that it is broader and aims at reducing all atmospheric emissions in the city, with particular emphasis on CO<sub>2</sub> emissions, CFCs and sulphur dioxide. Regina and Ottawa have also passed CO<sub>2</sub> reduction resolutions. Regina's goal is to reduce 1988 corporate CO<sub>2</sub> emissions by 20% by 1998 and community CO<sub>2</sub> emissions by 20% by 2005. Ottawa plans to reduce 1988 corporate CO<sub>2</sub> emissions by 50% by the year 2005.

## 5.0 IMPORTANT TRENDS

A number of important trends have emerged from this study on how municipalities are seeking to operationalize the concept of SUD.

1. As a result of public or political pressure, many municipalities have developed interim policies to deal with critical issues such as soil contamination and environmental evaluation of development applications.
2. Administrative structures are in a state of flux. Departments are being renamed (e.g., in Toronto, from Department of Public Works to Department of Public Works and Environment), new government offices are being created (e.g. Office of the Environment, Energy Efficiency Office, Healthy City Office), new positions are being created (e.g. Environmental Coordinator, Environmental Planner, Recycling Coordinator), new internal committees and Task Forces are being established (e.g. Interdepartmental Committee on Environment) and new external advisory committees are being created (e.g. Regina's Urban Environment Advisory Council, Peterborough's Sustainable Development Committee) to deal with both specific and general environmental issues.
3. New positions established fairly recently (e.g. Recycling Coordinator, Energy Management Officer) have been expanded to incorporate a broader range of responsibilities than those originally envisaged (e.g. an Energy Management Officer may now be responsible for developing a CFC policy or for implementing water conservation programs) as municipalities seek individuals with environmental expertise to formulate and implement SUD initiatives.
4. Networks are emerging as an important avenue for municipal officials to share their experiences in a rapidly evolving field. National networks have been established

for purchasing officers and environmental coordinators. A network for recycling coordinators has been established in Ontario.

5. Public pressure to implement new initiatives is strong in most municipalities. Probably the most severe pressure is being experienced in the field of waste reduction and recycling.
6. Most initiatives have only been implemented or proposed within the last three years and many are still in the conceptual design stage.
7. Some municipalities take on leadership roles that spur other municipalities to take similar actions. For example, Toronto provided leadership with its CFC bylaw, CO2 strategies, and establishment of an Environment Office. Vancouver has developed one of the country's most comprehensive air quality plans. The largest municipalities are not the only leaders however. Medium sized municipalities have become important incubators for some types of initiatives. Kitchener is the birthplace of the Blue Box recycling program that has spread across the country and Peterborough's Sustainable Development Committee is the first working example of a municipal roundtable on environment and economy.
8. Most initiatives identified have a strictly environmental focus rather than a social, economic, cultural or integrating function.
9. Stewardship and partnerships with business and the community are making important contributions to achieving SUD.

## 6.0 PROBLEMS



Respondents to the survey were asked to identify any problems that they had encountered in designing or implementing initiatives. Many of these problems were found to be unique to a particular initiative, but those listed below are more general in nature and apply across a range of different initiatives.

1. Municipalities lack legislative mandates to implement programs or controls such as: tree removal on private property, user fee charges for residential waste collection, the enforcement of "No junk mail" stickers, the imposition of packaging controls and declaration of the municipality as a "pesticide-free zone."
2. Provincial policy is lacking on some environmental issues that affect municipalities and which municipalities feel should be controlled at the provincial level, such as: soil contamination and environmental assessment. In other instances, such policies already exist (e.g. for environmental assessment) but municipalities feel that they

are not adequate for their needs and have supplemented them with local requirements.

3. Some municipalities lack environmental expertise among staff members and thus have difficulty in evaluating environmental issues or formulating environmental policy.
4. There are questions about the role of the Official Plan in achieving SUD. Some municipalities are concerned that too much is being expected of the Official Plan.
5. Budget pressures are forcing some municipalities to place a hold on, cut back or consider eliminating some initiatives. Initiatives which do not have as much visibility as other types of projects, such as a new community centre, tend to suffer when funds are limited.

## 7.0 LESSONS LEARNED

The results from the survey point to a number of lessons learned about developing and implementing SUD initiatives. These include the following:

1. Interdepartmental cooperation and coordination is of key importance because of the cross-sectoral nature of the concept of SUD.
2. Even though they are facing strong public pressure to implement SUD initiatives, many municipalities are concerned about the risks of doing so without track records to refer to in other communities.
3. Developers have expressed concern about delays involved in satisfying new environment-related requirements but have generally been cooperative.
4. Public support for almost all initiatives has been strong. Education is a key to obtaining good results.

## 8.0 CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

The results of this study indicate that the local response to achieving sustainable development is producing some profound changes in the way that municipal governments operate and in the types of issues that they are being asked to deal with. Key among these changes are the creation of new administrative structures and the modification of old ones, the incorporation of a new environmental value system into urban planning and engineering practices, and the initiation of a multitude of new policies, projects, and programs directed to addressing mostly environmental, as opposed to

economic or social, concerns. Insufficient attention has been addressed to these latter two areas and the way that they interact with the environment to date, but that may change once some of the basic environmental problems have been resolved.

Municipal governments looking to other municipalities in Canada for guidance on how to achieve SUD will find this study useful for answering the question "What is possible?" For most initiatives, it is too early to say what is working and what is not since they are still in the conceptual design stage or have only been implemented recently. Some initiatives may be abandoned, some may be modified and some may thrive in their current form. Toronto's CFC bylaw is an example of an initiative that went through several modifications before reaching its current state but has been cited widely as an illustration of a local government taking a leadership role in developing SUD policies.

This results of this study may help in answering a number of questions about the potential for operationalizing sustainable urban development, yet many questions remain. Three areas of future research and the reasons for their recommendation are described below.

1. The current study was restricted in scope to local municipalities only. However, most regional governments are also active in this area and some have made substantial advances. Future research should examine the role of regional governments in implementing sustainable urban development initiatives and focus on those areas where there are interdependencies between regional and local initiatives, such as waste management and transportation planning. Important sustainable urban development initiatives are also being implemented by community groups, business associations and non-profit research and interest groups. These groups are making valuable contributions towards achieving sustainable development in urban areas and an analysis of their experience, motivations and successes would be a useful subject for research.
2. The current study provides a broad overview of current initiatives, but in a fairly superficial manner, given the short time spent in each municipality. Future studies could examine a few types of initiatives or a few cities in more detail in order to gain a greater understanding of decision-making processes, problems, successes and other issues. The Canadian Environmental Assessment Research Council has already sponsored a study of this type for Montreal. The United States Department of Energy is sponsoring a study of municipalities across North America (including Toronto) examining the decision-making processes leading to implementation of CO2 reduction initiatives.
3. Many of the initiatives identified in this study have been implemented only within the last three years or are still in the conceptual design stage. There is a need for future research to evaluate properly the success of these initiatives in contributing to sustainable urban development.

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**ICURR** Intergovernmental Committee on Urban  
and Regional Research  
Comité intergouvernemental de recherches  
urbaines et régionales **CIRUR**

## Appendix A

**SUSTAINABLE URBAN DEVELOPMENT QUESTIONNAIRE:  
HEADS OF DEPARTMENT**

City \_\_\_\_\_ Date \_\_\_\_\_

Department/Agency \_\_\_\_\_ Telephone \_\_\_\_\_

Name of Interviewee \_\_\_\_\_ Position \_\_\_\_\_

Address \_\_\_\_\_

Staff \_\_\_\_\_ Budget \_\_\_\_\_ Date Established \_\_\_\_\_ Reports to \_\_\_\_\_

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**Statement 1.** I am conducting a survey on sustainable urban development initiatives in Canada's major cities. This study has joint provincial-federal funding and will result in a report which will be available to all Canadian municipalities from the Intergovernment Committee on Urban and Regional Research (ICURR). In each city, I am interviewing the department heads of Planning, Public Works, Parks, and Public Health (or their equivalents) plus relevant committees or offices.

**Q1.** I would like to start by asking you whether you have heard of the term **sustainable urban development** or simply **sustainable development** before?

YES \_\_\_\_\_ (Continue to next question)      NO \_\_\_\_\_ (Go to S2.)

**Q2.** Could you briefly describe to me your interpretation of its meaning? [If unable to respond, ask for official definition in department documents, if they exist.]

YES \_\_\_\_\_      NO \_\_\_\_\_ [Ask for agreement/disagreement with S2. plus own modifications, if different.]

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**Statement 2.** Sustainable development is a concept which has been defined in many different ways. One of the most widely quoted is the following (from the Bruntland Report, 1987):

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Some of the principles of sustainable development include (from Julia Gardner, 1989):

"... 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..."

Sustainable urban development has been defined as (from Nigel Richardson, 1989):

"... 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."

**Q3.** Could you please identify for me any policies, programs, plans, processes, administrative structures, or other activities under your jurisdiction [or with which you are associated e.g. interdepartmental committees] currently under consideration or in existence which you feel are contributing to sustainable development in [name of city]? I am also interested in any policies/programs/etc. which may have been considered or implemented but were subsequently abandoned.

**Q4.** How successful do you believe you have been in developing initiatives that contribute to sustainable development and address sustainable development concerns? Have you had any particular problems or can you identify any lessons learned during this process?

Appendix B

**SUSTAINABLE URBAN DEVELOPMENT QUESTIONNAIRE:  
PROGRAM MANAGERS**

NAME OF INITIATIVE:

\_\_\_\_\_  
[Note: if initiative is new office/committee/department, interview head and fill in first sheet of questionnaire.]

CURRENT STATUS: Under consideration / Conceptual design / Approved but not yet implemented / Implemented / Under review or evaluation / Completed / Cancelled [Why?] / On hold [Why?]

ORIGIN AND MOTIVATION FOR INITIATIVE:  
[community/industry/politicians/government/other]

\_\_\_\_\_  
\_\_\_\_\_

ADMINISTERED BY: \_\_\_\_\_ STAFF: \_\_\_\_\_

COUNCIL APPROVAL DATE: \_\_\_\_\_ BUDGET: \_\_\_\_\_

CONTACT PERSON: **ICURR** Intergovernmental Committee on Urban and Regional Research  
Comité intergouvernemental de recherches urbaines et régionales **CIRUR**

GOALS/OBJECTIVES: \_\_\_\_\_  
\_\_\_\_\_

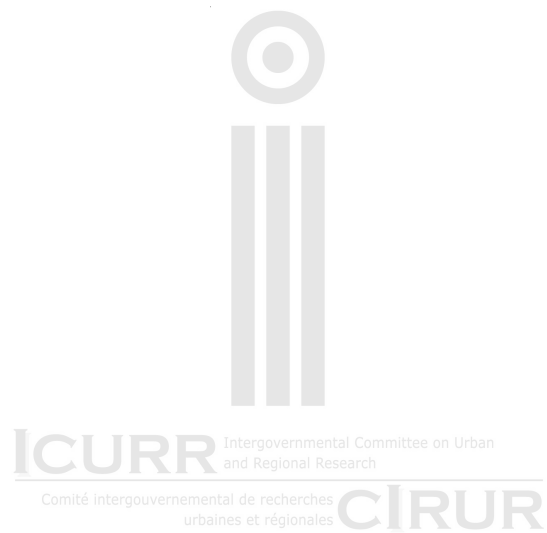
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**SUCCESSFUL ASPECTS:**

**PROBLEMS AND SOLUTIONS:**

**DOCUMENTATION:**



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.

ICURR's core funding is provided by the Canada Mortgage and Housing Corporation and by the ministries of municipal affairs of the provinces and territories. Canada's municipal governments also participate in ICURR through annual membership as do consultants and universities.

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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.

Le financement de base du CIRUR provient de la Société canadienne d'hypothèques et de logement ainsi que des ministères des affaires municipales des dix provinces et des deux territoires. Les municipalités canadiennes, de même que les experts-conseils et les universités, peuvent participer aux activités du CIRUR moyennant une cotisation annuelle.

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