

Barriers to Canadian Municipal Response to Climate Change

Pamela J. Robinson
School of Urban and Regional Planning
Ryerson University

Christopher D. Gore
Department of Political Science and Institute for Environmental Studies
University of Toronto

Résumé

Les municipalités canadiennes influencent et exercent un contrôle direct ou indirect sur approximativement 52 % des émissions de gaz à effet de serre. Depuis 1988, quelques municipalités canadiennes ont embrassé le défi du changement climatique et, sur la base de programmes municipaux, ils ont enregistré une réduction d'émissions. La publication récente du Plan du Canada sur les changements climatiques indique clairement le rôle prédominant des municipalités vis-à-vis la réduction d'émission de gaz à effet de serre. De plus, 'Le Nouveau Pacte : Des Villes et des Communautés Viables' affirme l'intention du gouvernement fédéral de continuer à fournir un appui financier aux villes et aux communautés. Il est donc important de considérer le rôle potentiel des municipalités canadiennes face aux changements climatiques et qui plus est les difficultés auxquelles ils font face. À cet effet, cet article présente les résultats d'une enquête basée sur 392 municipalités canadiennes de plus de 10,000 personnes. Bien que l'enquête fût menée au cours de l'été de 1998 et au cours du printemps de 1999, celle-ci demeure appropriée encore aujourd'hui. Les résultats de l'enquête fournissent de l'information sur un problème clé à savoir les difficultés que les municipalités canadiennes font face. L'article présente des recommandations afin d'accroître la capacité des municipalités à répondre aux changements climatiques sur la base des résultats qualitatifs et quantitatifs des données d'enquête et la mise à jour de l'information sur le nombre de municipalités membre de la Fédération canadienne des municipalités (FCM).

Mots clés: municipalités, Canada, changements climatiques, politique environnementale

Canadian Journal of Urban Research, Volume 14, Issue 1, Supplement pages 102-120.
Copyright © 2005 by the Institute of Urban Studies
All rights of reproduction in any form reserved.
ISSN: 1188-3774

Abstract

Canadian municipalities have direct or indirect control or influence over approximately 52% of greenhouse gas emissions. As early as 1988, some Canadian municipalities embraced the challenge of climate change and through municipal programs recorded emissions reductions. Given the recent publication of the Government of Canada's climate change plan which clearly emphasizes a prominent role for municipalities in meeting greenhouse gas emission reductions, and equally, the federal government's declared intent to provide further financial support to cities and communities through its 'New Deal for Cities and Communities', it is important to consider the potential role that Canadian municipalities can take in responding to climate change, and most importantly, the barriers they face in responding. Based on these observations, this paper presents evidence from a survey of 392 Canadian municipalities (all municipalities with populations of more than 10,000 people) conducted between the summer of 1998 and spring of 1999. The survey provides information on a key issue, which despite the date of the survey remains centrally relevant today: barriers to Canadian municipal response. Building on both quantitative and qualitative results from the survey data and updated information on the number of municipalities participating in Federation of Canadian Municipality (FCM) climate change programs, the paper concludes with recommendations as to how municipal capacity to respond to climate change can be increased.

Key words: municipal, urban, Canada, climate change, environmental policy

INTRODUCTION

In October 1988, leaders and policy experts from 46 countries participated in the Toronto Conference on the Changing Atmosphere where the first voluntary targets of reducing greenhouse gas (GHG) emissions were made. The "Toronto Target" was to cut emissions by 20% of 1988 levels by 2005, but for the most part national targets were not met. Since that meeting, and starting in earnest in the late 1990s, Canada has published several reports and action plans in its ongoing effort to take action on climate change,¹ most recently "Moving Forward on Climate Change." Domestically, it is now well recognized that the federal government's activities have produced vociferous intergovernmental debate that was intensified following ratification of the Kyoto Protocol in December 2002. Despite the lingering conflict over the potential costs and mechanisms to

respond to this global concern, particularly in relation to provincial and federal roles, a small, purposeful, and often overlooked response to climate change has been taking place in Canada since as early as 1988. This response and early action were initiated by a handful of municipalities who embraced the challenge of climate change and developed and implemented their own municipal response. Despite this initial progress and continually growing action at the municipal level, there still remains widespread uncertainty about what precise role Canadian municipalities can take in responding to this issue, and more importantly, about what barriers municipalities face in trying to respond. This was certainly the case in the late 1990s when this research was initiated, and still today there remains little written about the specific barriers Canadian municipalities did, do, and will face in making a purposeful contribution to the reduction of greenhouse gases. This is despite the recognition that municipalities have an active and important role to play as articulated in the latest federal government climate change plan, and in light of recent research clearly stating that “local action is essential” to address climate change (Parker et al. 2003, 181).

Responding to these concerns, and with financial support and interest from the Federation of Canadian Municipalities (FCM) and the Municipalities Issue Table,² between the summer of 1998 and spring of 1999 staff from 392 municipalities with populations of more than 10,000 people were surveyed, providing both quantitative and qualitative results. The chief purpose was to investigate two central issues: the extent of Canadian municipal response to climate change and the barriers to Canadian municipal response to climate change. With respect to the first issue, it is readily acknowledged that survey data on Canadian municipal response quickly becomes dated, particularly as more and more municipalities take action. However, given the breadth of the survey, its unique Canada-wide perspective, and its provision of baseline data for future research, particularly in conjunction with the other central issue investigated, these data provide an important opportunity for researchers and government to evaluate progress. With respect to the second issue, this paper defines “barrier” broadly as any issue that impedes action to response. Examples of barriers, as illustrated later, include such things as finances, human resources, capacity, and knowledge. This paper presents data on the two central issues and concludes by offering recommendations on how municipal barriers to response might be overcome.

The paper opens with a brief review of academic and grey literature used to inform the development of survey questions. Next, the method used to conduct the research is explained. Following this, analysis of the survey results identifies the extent to which Canadian municipalities have responded to climate change. Barriers impeding response are then explored, differentiating between municipalities with responses underway (defined as action municipalities or AMs) and those without (defined as no-action municipalities or NAMs). The paper concludes with recommendations as to how barriers to municipal response to climate change can be overcome.

MUNICIPALITIES AND CLIMATE CHANGE

The relationship between municipalities and climate change is based on a complex balance between vulnerability and responsibility. Canadian municipalities are vulnerable to impacts such as sea level rise, heat and cold related mortality, and incidence and intensity of extreme weather events. At the same time, municipal statutory authority and responsibility provide opportunities to influence many activities that contribute to climate change. Compared to international, federal and provincial government roles in CO₂ reduction, municipal roles are less well known, but vital all the same. Generally speaking, in Canada, municipalities:

- exert at least partial control over land use through zoning and official plan documents;
- issue building permits and development approvals;
- control parking supply and prices;
- are responsible for roads and public transit;
- oversee parks and recreation services;
- play a regulatory and management role in power and gas utilities; and,
- are considered the most “accessible” level of government from the residents’ perspective (Federation of Canadian Municipalities, 2005).³

Through careful management of each of these responsibilities municipalities can address energy use and take action toward reducing emissions. More specifically, using 1990 emissions data⁴ it is estimated that Canadian municipalities have direct control, indirect control or influence over approximately 52% of domestic emissions.⁵ Provincial

delegation of responsibilities makes some municipalities even more influential than this figure indicates.

This challenging combination of responsibility and vulnerability points to the definite need and opportunity for Canadian municipalities to respond to climate change. Yet despite the opportunity, in 1998 only 53 of the over 4000 Canadian municipalities had registered their efforts with the 20% Club of the FCM or the Cities for Climate Protection Program of the International Council for Local Environmental Initiatives (ICLEI).⁶ Today, this number has increased to 122 municipalities.⁷

Internationally, few authors have specifically delineated a role for municipalities in climate change response (Betsil 2001; Bulkeley 2000; Lindseth 2004; Yarnal, O'Connor and Shudak 2003). Research specific to Canadian municipal government response is also sparse. DeAngelo and Harvey (1998) and Lambright, Changnon, and Harvey (1996) examined Toronto's early initiatives to reduce emissions while Moore (1994) assessed, in detail, the barriers to Vancouver's "Clouds of Change" emissions reductions initiatives. Their findings are noted below. Most recently, Collins (2005), through a workshop held at the 2003 Canadian Institute of Planners annual conference, surveyed 46 workshop participants about their views on the role of planners in municipal emissions reductions.

Four Canadian non-governmental organizations can be credited with demonstrating leadership in working with Canadian municipalities: the FCM, the Pembina Institute, ICLEI and the David Suzuki Foundation. Each of these has a long history of climate change advocacy and conducting applied research aimed at advancing capacity to respond to climate change at the local level. The work of FCM and ICLEI has been most pivotal in assisting municipalities to achieve greenhouse gas emissions reductions.

Canadian municipal participants in FCM's Partners for Climate Protection Program have coordinated their activities in the form of a local action plan. The following list (FCM 2003) illustrates the generic steps toward developing and implementing a local response to reduce emissions:

1. Completion of an inventory of municipal energy use.
2. Calculation of municipality-wide CO₂ emissions.
3. Identification of a municipality-wide series of initiatives to reduce CO₂ emissions.
4. Evaluation of which initiatives will work for the municipality.

Barriers to Canadian Municipal Response to Climate Change

5. Establishment of a CO₂ reduction target.
6. Formalization of emissions reductions intention in a “local action plan” document.
7. Implementation of a local action plan.
8. Calculation of the total CO₂ emissions reductions to date.⁸

Action plans have led some Canadian municipalities — benefiting from early leadership from the City of Toronto (1993) and the City of Vancouver (1990) — to realize measurable emissions reductions from activities such as landfill gas capture, carbon sequestration from greening initiatives, municipal fleet conversion, building energy and water retrofits and transit-supportive land use planning.⁹ Yet, despite this progress, it is important to remember that only 122 of Canada’s more than 4000 municipalities have taken action towards emissions reductions. There clearly remains much potential for further action. Hence, in 1998, it was the absence of widespread Canadian municipal emissions reduction efforts that initiated this research. Understanding the conditions, in the form of barriers that impede Canadian municipal response to climate change, is an important step toward capitalizing on the full potential of municipalities to reduce greenhouse gas emissions.

Barriers to municipal response to climate change

The previous discussion illustrates that Canadian municipalities have a great deal of potential to respond to climate change and the participants in FCM’s Partners for Climate Protection Program have demonstrated that municipalities can take action to reduce emissions. This combination of potential and demonstrated success begs the question: why are more Canadian municipalities not engaged in emissions reductions efforts? From the research noted above, some case specific evidence on potential barriers to response can be revealed.

The research of Betsill (2001), Bulkeley (2003) and DeAngelo and Harvey (1998) suggests that municipalities may not recognize the global problem of climate change as a matter of local concern. In Canada, the typical division of responsibility between the provinces and municipalities leads to municipalities managing “matters of local concern”. Hence the failure to recognize that a global environmental challenge such as climate change is such a matter represents a potential barrier. As Wilbanks and Kates note, “there is a [...] grave mismatch between the

knowledge that is needed to act locally and what is currently being done globally to generate knowledge” (1999, 616).

Moore’s (1994) research on the implementation of the City of Vancouver Clouds of Change Initiative found that a lack of understanding of the issues served as a barrier to that city’s response, thus reflecting a potential ‘information barrier’. Literature on public perceptions of climate change suggests that the “public”: a) does not understand climate change; b) may be overwhelmed by complex environmental problems; c) may be confusing climate change with ozone depletion and other problems; and d) and may think that in Canada a warmer climate would be a welcome change (FCM 1996; Kempton 1997; Molloy 1997). Therefore, public misconceptions of climate change are important to consider as a potential barrier to municipal response since politicians, staff, voters and community group members may also hold these views. More importantly, if a municipal response is to occur, environmental issues, such as climate change, need to be a priority for both council members and residents (ICLEI 1997; Lang and Armour 1980; Lindseth 2004; Parkinson and Roseland 2002). Municipal council and staff recognition of climate change as a municipal priority is contingent upon their recognition of climate change as a matter of local concern. They must also understand the technical concerns and scientific issues of climate change in order to be willing to support initiatives to reduce emissions. However, making climate change a municipal priority is not enough because the lack of capacity to implement a response can also serve as a barrier.

Capacity to take action is dependent upon many things including local government having the organizational, budgetary, and jurisdictional ability to address climate change issues. Globalization, downloading, decentralization and decreased transfer payments have all had an impact on municipal capacity in Canada. Recent research shows that Canadian municipal capacity is also affected by budget constraints resulting from pressure both external and internal to municipal boundaries (Bradford 2002; Slack 2002). Fiscal constraints can have indirect impacts on municipal capacity to handle new environmental initiatives, for example, preventing them from employing the required staff (Gilbert et al. 1996; Tindal and Tindal 2000). In the case of Vancouver, Moore (1994) found that inappropriate vertical structures of government, weak linkages among the policies of civic and senior levels of government, and weak communication between government and its constituencies all served as barriers to emissions reduction success. Ann Dale (2001) has also

written about the significant barriers to effective environmental management created by government departments being organized into “silos, stovepipes and solitudes” thus preventing the types of interaction required, as identified by Moore, for municipal response to climate change. Fowler and Hartmann (2002) have identified this barrier as impeding Toronto’s capacity to respond effectively to environmental issues as well.

Finally, the information barriers previously discussed also have an impact on capacity as staff and politicians must have the knowledge and training to respond. Parkinson and Roseland’s (2002) research on Canadian municipal leaders in sustainable city initiatives notes the importance of a “well informed professional team” in contributing to municipal success. The earlier discussion of the elements of a local action plan also illustrates that technical expertise is needed. Jaccard, Failing and Berry’s (1997) research on community energy management details the range of technical and policy-oriented information required to implement similar types of initiatives.

In summary, the literature reveals that in order for municipal government to respond to climate change, there must be an awareness of the opportunities to reduce emissions and the political will to support the response, in part stemming from public support. Financial, technical and staff capacity must also be in place. These results, particularly Moore’s 1994 study of barriers in Vancouver, and the Lambright, Changnon, and Harvey (1996) and DeAngelo and Harvey (1998) studies of Toronto, guided the design of the survey informing this paper, and its central question: what are the barriers to *Canadian* municipal response to climate change? The above noted studies constituted the only research specific to Canadian municipalities on barriers to climate change response in the late 1990s, and, as noted, with the exception of Collins’ (2005) survey of municipal planners, there has been little additional research or publication on the issue. Thus the data presented here remains centrally relevant today, as it reinforces historic and city-specific findings, and it provides new analysis of the barriers municipalities from across Canada face in responding to climate change.

METHOD

Given the large number of Canadian municipalities without an identified climate change response program and our interest in analyzing barriers, this research involved the collection of data from a large number

of municipalities instead of in-depth data from a smaller number of municipalities or respondents. A survey was sent to staff in all 392 Canadian municipalities (cities, towns, regional governments, municipal districts, and regional districts) with populations greater than 10,000 people between the summer of 1998 and the spring of 1999.

Municipal staff, specifically department heads or senior staff members, were selected as survey respondents instead of politicians, community members, NGO staff or staff from provincial or federal levels of government, because of their contribution to the municipal policy and program development process. Since climate change is not an issue that falls neatly into the responsibility of one municipal department, key informants with responsibility for the following municipal functions were included: environmental management, planning, public works (landfill and waste management), transportation, transit, building inspection, and parks and recreation. For smaller municipalities without multiple department heads and/or senior staff, the town clerk or Chief Administrative Officer was selected.

Given the large number of key informants and the research goals, a self-completed postal survey, available in English and French, was selected as the research instrument. The survey contained sixteen closed-ended questions with multiple “other” categories providing respondents an opportunity to offer more comments.

In total, surveys were returned by municipal staff members in 236 of the municipalities surveyed representing a response rate of 60.3%. Table One illustrates the response rate by province.

Table One: Survey Response Rate by Province

	<i>number of municipalities receiving surveys</i>	<i>number of municipalities returning surveys</i>	<i>municipal response rate by province</i>
British Columbia	77	55	71.4%
Alberta	20	17	85.0%
Yukon	1	1	100.0%
Northwest Territories	1	1	100.0%
Saskatchewan	11	5	45.5%
Manitoba	5	2	40.0%
Ontario	125	88	70.4%
Quebec	122	51	41.8%
New Brunswick	5	1	20.0%
Nova Scotia	17	11	64.7%
Prince Edward Island	2	2	100.0%
Newfoundland	6	2	33.3%
TOTAL	392	236	60.3%

FINDINGS

Extent of Canadian Municipal Response to Climate Change

Survey participants were first asked to identify the local action plan elements discussed above, if any, that had been completed by their municipality. This question was used to distinguish between responses from action-municipalities (AMs), those who had at least one of the local action plan elements in place, and no-action municipalities (NAMs). The majority were NAMs (155 of the 236 responding municipalities). Survey data were analyzed to determine if any patterns based on municipality size or province emerged that differentiated the AMs from the NAMs. Municipality population was determined to be a statistically significant contributing factor, with smaller municipalities being less likely than larger municipalities to have emission reduction efforts in place. As is illustrated in Table Two, NAMs outnumbered AMs in the two smallest population ranges.

Table Two: Action and No-action Municipalities by Population

Population	AM	NAM
10,000 - 29,000 residents	7.6%	38.0%
30,000 - 99,999 residents	10.5%	20.7%
100,000 - 299,999 residents	8.0%	5.9%
300,000+ residents	7.6%	1.7%
Total	33.8%	66.2%

Chi square = 45.205; df=3;sig.<0.01

By distinguishing AMs from NAMs for the purposes of barrier identification, more specific evaluation and recommendations could be drawn. Through targeted questions on the same survey, the NAMs were surveyed on the barriers to their initiating a response and the AMs were surveyed on barriers to their further progress in emissions reductions. In the discussion that follows, the barriers identified from the survey data are presented in three categories: priority, capacity and information barriers. The discussion concludes with a comparison of AM and NAM barriers.

Priority barriers: Climate change as a matter of local concern

Overall, the municipal staff from NAMs indicated that climate change was not widely recognized as a local government issue. Of the NAM municipal staff responding, 34% identified “Climate change is not a local government issue” as a very important reason why their municipality had not developed a response to climate change (Table Three). The challenge of framing this global environmental problem as a significant issue for local government is echoed in a comment offered by a NAM respondent: “The macro scale of the concept of climate change is easy to understand on a national basis. However, equating that to the local level is a difficult “sell” to politicians to get necessary action planning.” Similarly, when asked to rank the importance of barriers to municipal response, 40% of NAM staff indicated “CO₂ reduction is not a priority for our Council” as a very important barrier. Emissions reductions may not be a council priority, according to one respondent, because “CO₂ emissions are simply not on the agenda yet” or because other issues may take precedence, as stated by another respondent: “We have other priorities [such as] coho streams, endangered plant and tree protection.”

Table Three: Ranked barriers to municipal response to climate change identified by NAM staff

Barriers	very important(%)
1. Our staff does not have the training to participate in CO ₂ reduction	40.3%
2. CO ₂ reduction is not a priority for our Council.	40.3%
3. Our municipality does not have enough money.	35.0%
4. Climate change is not a local government issue.	34.4%
5. CO ₂ reduction is the federal government’s responsibility.	33.2%
6. This type of work would require too much staff time.	32.6%
7. CO ₂ reduction is the provincial government’s responsibility.	29.1%
8. CO ₂ reduction is not a priority for our residents.	25.0%
9. In our province, we don’t have the legislative power to impact CO ₂ reduction.	12.9%
10. The private sector (developers, local business, etc.) would oppose it.	8.8%
11. Science has been inconclusive in establishing climate change as a real threat.	6.2%

Capacity Barriers

Identifying climate change as a matter of local concern is only one element of a successful municipal response to climate change. The survey reveals that municipal government still requires the appropriate

Barriers to Canadian Municipal Response to Climate Change

capacity in the form of funding, allocation of staff time and staff training to initiate or continue the response.

Table Four: Relative Significance of Barriers to Expanding Ongoing Efforts to Reduce CO₂ Emissions by Action Municipalities

	most significant (%)
Municipal Capacity	
budget restrictions	47.3%
limited staff time	36.4%
further action exceeds the training of our staff	25.5%
Municipal Priority	
further CO ₂ reduction is not a priority for our Council	16.4%
further action would exceed our legislative power	12.7%
further CO ₂ reduction is not a priority for the residents	7.3%
further action would provoke opposition from: [variety listed]	5.5%
we feel we are already doing enough	3.6%

AM staff identified budget restrictions as the most significant barrier to expanding their emissions reductions program (Table Four). NAM staff ranked budget limitations as the third most important reason why their municipality had not responded to climate change (Table Three). The significance of the perceived costs of responding to climate change is reinforced through from NAM respondents. For example:

“At present, this topic is one more add-on to an already full job description. The costs in terms of time, manpower and money to meaningfully address the issues associated with greenhouse gas reductions and climate change are a real concern to us.”

For another example:

“We need more staff to deal with the organizations. In order to implement any CO₂ emissions reductions programs in any form or without help, more municipal staff will be necessary! [The] other motivation is money only!”

Staff from AMs identified constraints on their time as the second most significant barrier to expanding their response to climate change (Table Four). In comparison, for NAM staff “This type of work would

require too much staff time” was the sixth most frequently identified “very important” barrier. In a series of additional comments, staff addressed the presentation format for information on climate change, identifying the need for simplicity and for the reinforcement of the perception that efforts to address climate change will require time and effort.

The need for staff training also emerged. NAM staff identified lack of staff training as one of the two most frequently identified “very important” barriers to municipal response to climate change (Table Three), while AM staff ranked the need for more staff training third as a barrier to response expansion (Table Four). Staff also expressed the need for information about municipal success stories. Learning from another municipality’s experience may be one way of overcoming the barrier of limited staff training, reducing the need to ‘reinvent the wheel’.

Information Barriers

The survey data suggest that climate change is not a priority for municipal staff and politicians. Municipal council lack of identification of climate change as a priority was one of the two most frequently identified “very important” barriers by NAM staff (Table Three). In another question, respondents ranked municipal councils as the most important stakeholders in municipal environmental planning agenda setting. The combination of councils’ importance in agenda setting with their low prioritization of the climate change issue indicates that more outreach work is needed to engage councils in discussion about the need to respond to climate change.

It is important to note that the significance of information barriers is increased by their potential to exacerbate the impact of capacity and priority barriers. Capacity barriers such as limited staff time and training were identified as significant. Access to information about programs and policies that can lead to emissions reductions could help municipal staff overcome this challenge. Similarly, if councils were provided with information explaining the potential role municipalities could play and the potential benefits to municipalities resulting from emission reductions efforts (FCM 2005), then this information could have the potential to transcend the barrier of councils not making climate change response a priority.

Barriers summary: Comparing Action and No-action Municipalities

In the previous discussion, survey responses from action- and no-action municipalities were analyzed to identify municipal priority and capacity barriers. When comparing the responses of NAM and AM staff, one difference stands out. The most important barriers to no-action municipalities initiating emission reduction efforts were both capacity and priority barriers (Table Three). But in the case of action-municipalities, the most significant barriers were all capacity-related (Table Four).¹⁰ This difference in importance of barriers suggests that different efforts are needed to encourage NAM response versus supporting further AM efforts.

DISCUSSION

This study confirms that Canadian municipalities face priority, information and capacity barriers to initiating and expanding a response to climate change, and reinforces the need to avoid a “one-size-fits-all” approach to encouraging municipal response. Efforts to increase the municipal role in helping Canada meet its Kyoto emissions reductions commitments should be designed with the barriers in mind to allow for the maximum potential effectiveness.

In terms of addressing barriers relating to climate change as a local government priority, the challenge of convincing local government that they have an important role to play in responding to a global environmental issue with which they have not yet been engaged appears formidable. Despite the increase in the number of municipalities participating in FCM’s Partners for Climate Protection program since the time the survey was completed, there still remain many more no-action than action municipalities in Canada. In light of the difficulty the federal government has had in devising a strategy with the provinces, and given the potential influence municipal action could have, the challenge of convincing local governments that they could bring about significant emissions reductions warrants serious attention.

The division of responsibility across three levels of government in Canada also presents a formidable challenge to overcoming capacity barriers. As creatures of the provinces, Canadian municipalities often take their political lead from provincial mandates. In the case of climate change, not surprisingly, there is a direct relationship between provincial

support of initiatives and the potential impacts of emissions reduction on provincial economies. Hydro-electricity rich British Columbia and Quebec have made more progress while fossil-fuel producing Alberta and Newfoundland, and automobile industry dependent Ontario have historically stood in the way. Thus, provinces cannot be counted on for widespread political leadership on the climate change issue. Moreover, efforts by the federal government to form direct working relationships with municipal governments in Canada tend to make provincial governments wary. On-going efforts by the FCM to engage municipalities in emissions reduction efforts have the potential to increase municipal awareness that there is a role for them to play in climate change, but their efforts cannot overcome political will barriers alone. Recent developments toward the provision of a “new deal” for cities have the potential to open the door to new federal-municipal dialogue and action on climate change, particularly if connected to municipal infrastructure financing, through programs such as the Green Municipal Fund and the Canada-Ontario Municipal Rural Infrastructure Fund. With increased financial and technical support through partnerships with organizations like FCM, municipalities may have more time and opportunity to consider issues originally deemed lower priority like climate change. With new jurisdictional power including new opportunities for municipal taxation, opportunities for municipal response may also ensue.

Survey respondents indicated an interest in receiving information about how municipalities can reduce CO₂ emissions. However, the transition from information provision into local action plan development is contingent upon municipal interest and capacity. First and foremost, the issues of limited budgets and staff capacity must be addressed. If the federal government is serious about its commitment to Kyoto then municipal governments must be provided with the appropriate financial and technical support for climate change response efforts. Recently, the FCM was given \$300 million by the federal government for their Green Municipal Fund Program that supports municipal government action to cut pollution, reduce greenhouse gas emissions and improve quality of life. While this is an important initiative, governments must be careful to ensure that any efforts to initiate or expand municipal emissions reduction efforts do not exacerbate the capacity barriers faced by local governments.

Efforts to gain widespread Canadian municipal response to climate change need to be directed to a number of different stakeholders. In

this regard, planners have an important role to play. Many current issues with which planners wrestle, such as smart growth, brownfield revitalization, curbing sprawl and urban intensification, have the potential to affect CO₂ emissions. But as Collins (2005) reveals, respondents to his survey of conference participants indicated that a lack of awareness, a lack of funding and a lack of knowledge are all barriers to incorporating climate change into planning. The issue of climate change needs to become part of the educational and professional dialogue of planners. Climate change mitigation and adaptation strategies need to be integrated into the curriculum of planning schools and become a more regular part of the dialogue of professional development, including coverage in journals and magazines with a planning audience.

To conclude, this paper has provided a Canada-wide assessment of barriers to municipal response to climate change and a research foundation from which future investigations can stem. The research is part of a small but growing body of work intending to understand how local responses to global problems such as climate change are nested, and to provide qualitative analysis of social factors critical to natural scientific phenomena.

Since the survey was completed, interest in municipal response to climate change in Canada has grown. This research determined that 81 municipalities had some form of emissions reduction efforts in place. By the end of 2003, there were 105 municipalities registered in the FCM “Partners for Climate Protection” program, and today in the spring of 2005 there are 122. While some progress has been made it is clear that barriers still impede Canadian municipalities from realizing the potential to significantly reduce emissions. As the most recent FCM results attest, there is still ample opportunity to increase, improve and support municipal action. If the federal and provincial governments are committed to GHG reductions, then municipalities must figure centrally in these efforts. Recognizing the significance of specific barriers to action faced by municipalities is an important step in this action.

Acknowledgements

The authors would like to thank Rodney White, Virginia Maclaren, Amrita Daniere, Danny Harvey, and Sonia Labatt for their assistance and guidance during the completion of this research. William Page is also thanked for his review of this paper at the Association of Collegiate

Schools of Planning Conference. The editors and reviewers from the Journal are also thanked for their feedback.

Notes

¹ The Government of Canada, Climate Change website lists all of the publications and reports they have produced in the last five years, including previous action plans. See: <http://www.climatechange.gc.ca/english/publications/>

² The Municipalities Issues Table was one of 16 Tables struck by the federal government during the National Climate Change Process to investigate impacts and responses to climate change, including early actions that could be taken. See *Canada's National Implementation Strategy on Climate Change*, October 2000, <http://www.climatechange.gc.ca/english/publications/nis/NIS-eng.pdf>

³ The role of accessibility is important in that it allows municipal government to lead by example, engage the public, and provide an opportunity to illustrate the local implications of climate change.

⁴ The year 1990 is the international year selected for baseline data comparisons for emissions reductions.

⁵ Direct control over emissions comes from the municipal governments' use of fuels and electricity in all its operations and methane gas emissions from landfills, as well as greening activities and urban forestry. Indirect control over emissions comes from institutions and enterprises that may not be operated directly by the municipal government, but over which the municipality has indirect control through directorships, funding, shared facilities, etc. Influence over emissions results from activities that are at least partly controlled or influenced by municipal government laws, taxes, or regulation (Municipalities Issue Table 1998).

⁶ The goal of the ICLEI and the FCM programs was to assist municipalities in the development and implementation of greenhouse gas emissions reductions programs through the provision of technical and program-based support.

⁷ The Federation of Canadian Municipalities website presents conflicting information on the total number of municipalities participating in the Partners for Climate Protection (PCP) program, varying between 122 and 124.

⁸ Today, FCM now uses five 'milestones' as indicators of municipal progress in its PCP program. The five milestones are: creating a greenhouse gas emissions inventory and forecast; setting an emissions reductions plan; developing a local action plan; implementing the local action plan or a set of activities; and, monitoring progress and reporting results. Of the 122 member municipalities participating in the PCP program, 43 have completed Milestone 1 and 13 are in progress; 27 have completed Milestone 2 and 9 are in progress; 12 have completed Milestone 3 and 20 are in progress; 4 have completed Milestone 4 and 11 are in progress; and none have completed Milestone 5 with 2 in progress.

⁹ For more information about how Canadian municipalities are reducing greenhouse gas emissions, please visit the Federation of Canadian Municipalities PCP website: http://kn.fcm.ca/ev.php?URL_ID=2805&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1115397244

¹⁰ In the case of responses from action-municipalities respondents, "significance" refers to the identified importance of the barrier rather than statistical significance.

References

- Betsill, M. M. 2001. Mitigating Climate Change in US Cities: opportunities and obstacles. *Local Environment* 6 (4): 393 – 406.
- Bradford, N. 2002. Why Cities Matter. Canadian Policy Research Network paper. <http://www.cprn.com/en/doc.cfm?doc=766> (Accessed January 15, 2005).
- Bulkeley, H. 2000. Down to Earth: local government and greenhouse policy in Australia. *Australian Geographer* 31 (3): 289 – 308.
- City of Toronto. 1993. *Draft Strategic Action Plan for the Reduction of Carbon Dioxide Emissions in the City of Toronto*. Toronto: International Council for Local Environmental Initiatives.
- City of Vancouver Task Force on Atmospheric Change. 1990. *Clouds of Change*. Vancouver: Task Force on Atmospheric Change.
- Collins, N. 2005. What Planners Need to Prepare for Climate Change: Responses to A Questionnaire. *Plan Canada* 45(1): 31-34.
- Dale, A. 2001. *At the Edge, Sustainable Development in the 21st Century*. Vancouver: UBC Press.
- DeAngelo, B., and L. D. Harvey. 1998. The jurisdictional framework for municipal action to reduce greenhouse gas emissions: case studies from Canada, USA and Germany. *Local Environment* 3 (2): 111-136.
- Federation of Canadian Municipalities. 1996. *Job Creation, Cost Savings, And Pollution Prevention Through Municipal Greenhouse Gas Emission Reductions: Barriers & Opportunities For Improved Intergovernmental Cooperation*, Ottawa: FCM.
- Federation of Canadian Municipalities. 2003. *Partners for Climate Protection Annual Report 2002-2003*. Ottawa: www.fcm.ca
- Federation of Canadian Municipalities. 2005. *Partners for Climate Protection website*. http://kn.fcm.ca/ev.php?URL_ID=2805&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1104857844 (Accessed April 20, 2005).
- Fowler, E., and F. Hartmann. 2002. City Environmental Policy: Connecting the Dots. In *Urban Policy Issues: Canadian Perspectives*, 2nd edition, ed. E. P Fowler and D. Siegel, 155-171. Don Mills, Ontario: Oxford University Press.
- Gilbert, R., D. Stevenson, H. Girardet and R. Stren. 1996. *Making Cities Work: the Role of Local Authorities in the Urban Environment*. London: Earthscan Publications.
- Harvey, L.D.D. 1992. Implementation of Mitigation at the Local Level: The Role of Municipalities. In *Global Climate Change: Implications, Challenges and Mitigation Measures*, ed. Mujamdar,

- S.K., Kalkstein, L.S., Yarnal, B., Miller, E.W., and Rosenfeld, L.M. Pennsylvania. Academy of Sciences, Easton PA.
- ICLEI. 1997. *Local Government Implementation of Climate Protection: Case Studies*. Toronto: ICLEI.
- Jaccard, M., L. Failing and T. Berry. 1997. From equipment to infrastructure: community energy management and greenhouse gas emission reduction. *Energy Policy* 25 (13): 1065-1074.
- Kempton, W. How the Public Views Climate Change. 1997. *Environment* 39 (9): 12-21.
- Lambright, W., S. Henry, A. Changnon and L.D. Harvey. 1996. Urban Reactions to the Global Warming Issue: Agenda Setting in Toronto and Chicago. *Climatic Change* 34: 452-478.
- Lang, R., and A. Armour. 1980. *Energy Conservation and the Municipal Planner*. Ottawa: Energy Mines and Resources Canada.
- Lindseth, Gard. 2004. The Cities for Climate Protection Campaign (CCPC) and the Framing of Local Climate Policy. *Local Environment*. 9 (4) 325-336.
- Molloy, A. 1997. Environmentalism and the City. In *The Politics of the City: A Canadian Perspective*, Timothy Thomas 1996, 49-65. Toronto: Nelson
- Moore, J. L. 1994. What's Stopping Sustainability? Examining Barriers to Implementation of Clouds of Change. Master's thesis. Vancouver: School of Community and Regional Planning.
- Municipalities Issue Table. 1988. *Foundation Paper*. Ottawa: Government of Canada, National Climate Change Program.
- Parker, P., I. H. Rowlands and D. Scott. 2003. Innovations to reduce residential energy use and carbon emissions: an integrated approach. *The Canadian Geographer* 47 (2): 169-184.
- Parkinson, S., and M. Roseland. 2002. Leaders of the Pack: an analysis of the Canadian 'Sustainable Communities' 2000 municipal competition. *Local Environment* 7 (4): 411-429.
- Slack, E. 2002. Municipal Finance and the Patterns of Urban Growth. Toronto: C.D. Howe Institute. Commentary 160. February.
- Tindal, C. R., and S. Nobles Tindal. 2000. *Local Government in Canada*, 5th Edition. Scarborough, Ontario: ITP Nelson.
- Wilbanks, T. J. and R. W. Kates. 1999. Global Change in Local Places: How Scale Matters. *Climatic Change* 43: 601-628.
- Yarnal, B., R. E. O'Connor and R. Shudak. 2003. The Impact of Local versus National Framing on Willingness to Reduce Greenhouse Gas Emissions: a case study from central Pennsylvania. *Local Environment* 8 (4): 457 – 469.