



Backgrounder

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URBAN REGIONS UNPREPARED FOR CLIMATE CHANGE

It is now unequivocal that climate change is underway and that the consequences are likely to be severe. Cities and urban residents will be directly affected by many of the impacts of climate change, which include: increased intensity and frequency of extreme weather events, heat waves, water shortages and other effects.

In the climate change debate, both mitigation and adaptation are important responses to potential climate change. Until recently, the overwhelming amount of information focused on mitigation rather than adaptation. Although both minimize the risk of the impacts of climate change, their approaches and responses are different.

Adaptation vs. Mitigation

Mitigation is the reduction of greenhouse gas emissions and benefits the global environment. The need to control the quantity and sources of emissions presents a challenge with even the best intentions of international agreements such as the Kyoto Protocol. At this time, technological alternatives to fossil fuels and economic obstacles further complicate efforts to ratify agreements or achieve sufficient results in the short term. What is needed is action at the senior levels of government – provincially, federally and internationally – intent on global mitigation results. Cities acting by themselves do not have the jurisdiction or capacity to reduce emissions on a large scale without their leadership and direction.

Adaptation is different. The benefits of adaptation fall largely where the costs are expended. If a city protects itself from storms, floods, droughts, heat waves, invasive pests, species, and diseases, it is the people of the city that benefit. Their environment is better, their health is more protected, and their economic activities are less liable to damage and disruption. Cities need to direct resources for clear institutional policies and official plans for considering climate change impacts and adaptation strategies.

The Potential Impacts of Climate Change

Here are a few examples of the impacts of recent extreme weather events in the Toronto area:

- January 1999 - snowstorm paralyzes the city and region; public transit at a stand still, schools closed, businesses shut down, and Pearson Airport operating at one-third capacity. Snow clearing alone cost more than \$70 million.
- August 2003 – blackout in southern Ontario; subway trains stopped mid-tunnel, refrigeration equipment dead, cost to the City of Toronto: \$200 million.
- August 2005 – rainstorm washes out a portion of Finch Avenue polluting our waterways; singled out by the insurance industry as the most expensive natural disaster in Ontario's history. Cost to repair and reforest: more than 18 million.



What is needed?

The Clean Air Partnership made site visits to six municipalities to study their efforts on adaptation to climate change. *Cities Preparing for Climate Change* provides lessons from the experience of these six early adapters: London UK, New York, Boston, Halifax, Vancouver and Seattle. The cities identified adaptation options by sector, rather than type. For example, water supply system and its adaptation options; energy and adaptation options; transportation, buildings, health, and so on.

The most successful cities and urban regions studied for this research undertook adaptation processes that included four main elements:

- Measures to increase public awareness of likely climate change impacts and to engage stakeholders in identifying problems and solutions;
- A systematic review of climate trends and projections for the specific urban region and an analysis of where and how major impacts are likely to occur;
- Identification of a range of options for reducing vulnerability to climate change, including an assessment of existing programs that create a foundation for an adaptation strategy; and
- Developing a strategy and putting it into action.

The City of Boston provides one example of identifying a range of options. A scenario of cost estimates for coastal flooding impacts indicated that failing to adapt costs more than the costs of adaptation.

Climate Event	Scenario	Residential Costs*	Commercial/Industrial Costs	Emergency Response Costs	Adaptation Costs	Total
Moderate sea-level rise One event (flood)	“Ride it Out”	3,563	13,525	2,905	0	19,993
	“Build Your Way Out”	1,091	3,984	863	3,462	9,400
	“Green”	756	2,697	587	1,766	5,806
One metre sea-level rise Three events	“Ride it Out”	16,140	64,250	13,666	0	94,056
	“Build Your Way Out”	1,820	6,703	1,449	3,462	13,434
	“Green”	3,272	12,760	2,726	6,798	25,556

1. **“Ride it Out”** – assumes that no adaptive steps will be taken



2. **“Build Your Way Out”** – assumes that limited structural measures are taken
3. The **“Green”** Scenario – assumes pro-active implementation of innovative policies and technologies to prepare for and counteract adverse climate impacts.

Leading municipal and regional governments have also made a concerted effort to communicate the importance of climate change impacts and adaptation internally and with the general public.

It takes leadership, persistence and a broad knowledge of urban systems and how they interact with climate and with each other to get and keep adaptation on the agenda of cities and to devise and implement adaptation strategies. It is vital for cities to continue to share their experiences and to learn from each other as these processes continue.

The *Cities Preparing for Climate Change: A Study of Six Urban Regions* is the second part of a four phase project, Adapting to Climate Change in Toronto, undertaken by the Clean Air Partnership (CAP) in collaboration with the City of Toronto.

The four reports include:

- *A Scan of Climate Change Impacts on Toronto*
- *Cities Preparing for Climate Change: A Study of Six Urban Regions*
- *Hot Days and Nights in the City: Adapting to Climate Change in Toronto*
- *Climate Change Adaptation Options for Toronto’s Urban Forest*

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To download the *Cities* report visit www.cleanairpartnership.org

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