Timeframe

February 2006	Impacts Scan
May 2006	Learning from other Cities Report
June 2006	Decision-Makers Workshop
October 2006	Development of Adaptation Strategies
December 2006	Final Report

Funders

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Canada TORONTO Atmospheric Fund

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Adapting to Climate Change in Toronto

Developing strategies to protect the city and its inhabitants from the impacts of climate change

The Clean Air PARTNERSHIP

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CLIMATE CHANGE IN TORONTO

Climate change is one of the most serious threats facing humankind. The increase of greenhouse gases in the atmosphere is bringing more than just warmer summers and milder winters. More worrisome is the destabilizing effect that climate change can have on weather patterns, increasing the frequency and intensity of extreme weather events such as heat waves, storms, and droughts, and leading to floods, blackouts, forest fires and other weather-related disasters.

Worldwide, climate has already begun to change. The three warmest years on record have occurred since 1998 and 19 of the warmest 20 since 1980. The summer of 2005 demonstrated the extreme weather which is likely to become commonplace in the next 50 years.

Extreme Heat & Smog

The summer of 2005 was the warmest on record for Toronto. With 48 smog days and 26 heat alerts, the city experienced a very hot, uncomfortable and unhealthy summer.

Summers in Toronto will continue to get hotter and more deadly. According to a report released by Toronto Public Health in 2005, heat-related deaths will double by 2050 and triple by 2080. Because heat exacerbates air pollution, deaths related to poor air quality will increase by 20% in 2050 and by 25% in 2080.

Intense Rainstorms

On August 19, 2005 Toronto was hit by a short summer storm that dumped record rainfall on the city north of the 401. The Yonge and Steeles area received 175 mm of rain in one hour. The storm overwhelmed stormwater systems, flooded basements and roadways, and washed out a section of Finch Avenue taking out gas lines, communication cables, and sewage pipes. This rainstorm is the most expensive weather disaster in Ontario's history with insurance claims exceeding $400 million.

Finch Avenue
Source: Meteorological Service of Canada

FUTURE IMPACTS

Toronto is especially vulnerable to extreme weather events given its concentration of people, buildings, and aging infrastructure.

Water

Demand for water will increase as summers continue to get hotter, putting pressure on Toronto's water supply. Warmer lake water temperatures will provide more hospitable conditions for pathogens, degrading our drinking water. Lake levels are expected to drop, increasing the need for dredging of navigation routes, which has the potential to re-suspend polluted sediment.

Health

Heat and air pollution-related deaths are predicted to increase to almost 1,500 per year by 2080. Hotter weather will increase ozone concentrations and smog, making life more difficult for asthmatics. Higher CO_2 levels have been shown to increase ragweed pollen and worsen hay fever. Vector-borne diseases will spread as warmer weather allows carriers to expand their range and infectious agents to survive the winter. In 2005 alone, West Nile virus infected 88 people and caused 4 deaths.

Energy

Hotter summers will increase peak energy use from air conditioning, putting pressure on the electrical supply system and contributing to blackouts and brownouts. The electrical grid is at risk from wind, ice and snowstorms. Lower water levels will reduce the capacity for hydroelectric energy generation.

Transportation

Intense rainfalls are likely to increase flooding of transit corridors and airports, and washout roadways. Ice storms will more frequently interfere with the mobility of people and goods. Costs for shipping are expected to increase as lower lake levels necessitate smaller loads.

Buildings

Buildings are at risk of structural damage from windstorms, or roof collapse from heavy snowfalls. Intense rainfall coupled with sewer backups can lead to thousands of flooded basements as seen during the rainstorm on August 19, 2005.

Tourism & Recreation

Warmer weather might increase tourism in Toronto, though extended heat waves and smog could counteract this effect. Lower lake levels will affect shoreline recreational and marine activities.

Ecosystem

The changing climate is altering plant and animal communities, with indigenous species dying off and invasive species moving in. City trees and other plants, already stressed by the urban environment, will be further damaged by extreme and prolonged summer heat.

Economy

There are likely to be both direct and indirect impacts on the economy. Extreme weather events will result in business disruption, loss of productivity, and damages to property and infrastructure. Insurance premiums will rise. Government funds for capital projects and social services may be diverted to emergency services and to repair existing infrastructure.

Social Impacts

Poor and marginalized people are more at risk because they lack resources to reduce their exposure to impacts. Low-income people are less likely to have air conditioning, for example, or to have their belongings insured in case of damage from extreme weather. More extreme impacts were seen in New Orleans as a result of Hurricane Katrina in 2005.

ADAPTING TO CLIMATE CHANGE IN TORONTO

The Clean Air Partnership (CAP) is working with the City of Toronto to incorporate climate change into program planning and implementation. The project will involve the following:

1: Impacts Scan

A summary of weather impacts already affecting Toronto, the City's current response to this, and a look at climate change impact scenarios for the near and medium term.

2: Learning from other Cities

A review of what other leading cities are doing to tackle expected climate change impacts, and will identify strategies that appear promising for Toronto.

3: Decision-Makers Workshop

This workshop will be held in June 2006 with Toronto decision-makers to identify key areas where the City needs to be developing and implementing adaptation strategies.

4: Adaptation Strategies

A menu of adaptation options for two strategic areas will be developed in collaboration with the City of Toronto.

5: Next Steps

Securing funding for long-term adaptation strategy development.