

Getting Started on Adaptation to Climate Change

David Noble

In his December 2005 address at the United Nations conference on climate change, our then Prime Minister Paul Martin stated, "the time is past to debate the impact of climate change. We no longer need to ask people to imagine its effects, for now we can see them."

Indeed, we need not look far:

- ▶ Two 1-in-100-year storms struck southern Ontario in a five-week period in summer 2005, causing an estimated \$400-\$500 million in insured losses.
- ▶ Ontario recorded more than 48 smog days and 26 heat alert and extreme heat alert days in 2005, eclipsing the previous records of 20 days and 16 days, respectively.
- ▶ A series of successive rain events and a hailstorm pounded Edmonton in July 2004, causing a record-setting flash flood, estimated to be a 1-in-200-year event. The storms resulted in approximately \$175 million in insured losses and infrastructure damages.
- ▶ In September 2003, Hurricane Juan struck parts of Nova Scotia and Prince Edward Island, causing over \$100 million in losses and destroying over 100 million trees, including 70 percent of the 86,000 trees in Halifax's Point Pleasant Park. Only five months later, the fierce blizzard dubbed White Juan dumped nearly

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a metre of snow in several areas in the region, prompting both Nova Scotia and PEI to declare province-wide states of emergency lasting four days.

- ▶ British Columbia's 2003 forest fire season was the worst season in memory and the most expensive natural disaster in the province's history. It claimed several lives, burned some 334 houses to the ground, and forced the evacuation of over 50,000 residents. In the same year, the Fraser River peaked at one of its lowest water levels since record-keeping began, and Kelowna recorded its driest June-July-August period on record. Shortly after the fire season,

coastal BC was hit with record rainfalls, resulting in major floods and mudslides, and further burdening an already crippled forestry sector due to road closures and wet ground.

- ▶ The 1998 ice storm that crippled eastern Ontario and western Quebec caused 28 deaths, left 4.7 million Canadians without power, and cost over \$5 billion in total losses. It was the worst natural disaster in Canadian history.

Many people believe that these and many other examples from recent years are the signs of a warmed climate. Of those that are not yet convinced, most agree that these are, in the very least, precisely the types of problems that will be more common in the near future. At the fourth Municipal Leaders Summit on Climate Change, which was held in Montreal last December in conjunction with the UN Conference, municipal leaders from around the world faced the growing prospect that what we thought would be a 2080s problem is a problem today.

Adapting to Climate Change

Municipalities are already adapting to climate change. In general, though, they are not doing so explicitly to deal with climate change risks or opportunities. For example, municipalities have developed low-water response plans to deal with summer low-water conditions, or heat warning systems to deal with extreme heat conditions. The plans are intended to help cope with current climate variability, but they will also help cope with the low-water and heat conditions that will be more common in a warmer climate. The people who design and implement these measures may not think of them in terms of “adaptations to climate change.” Instead, they think of “managing risks,” “reducing vulnerabilities,” “strengthening resilience” or other terms. Irrespective of the terms, some actions that are already being undertaken will help prepare municipalities for a changed climate.

However, additional, planned adaptations are required to effectively manage climate change risks. To date, adaptation has not kept pace with the risks – impacts have escalated continuously over the past several decades. As our urban centres grow and intensify, and the population grows and ages, more people and property will be at risk. The climate will continue to warm and become increasingly variable over the coming decades, resulting in an increase in weather-related hazards and other ecosystem changes. Com-

bined, these trends raise concerns about various aspects of municipal infrastructure, service delivery and administration, including:

- ▶ infrastructure planning, engineering and management;
- ▶ water and energy supply and distribution;
- ▶ wastewater management;
- ▶ public works operations and management;
- ▶ transportation systems design and management;
- ▶ land-use planning;
- ▶ parks and recreation planning and operations;
- ▶ local economic development;
- ▶ public and emergency health services; and
- ▶ emergency preparedness.

Adaptation to climate change refers to “adjustments in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderate harm or exploits beneficial opportunities.” Thus, if climate change might result in more intense storm activity, improving emergency preparedness would be an adaptation response; if droughts and water shortages might be more of a problem in the future, additional water conservation would be an adaptation response. Countless other examples exist.

Expanding Familiar Activities

In practice, most adaptations to climate change are familiar

activities, rather than fundamentally new. People will often say “we do those things already,” be it in respect to conserving water during summer low-water conditions or preparing for weather-related emergencies. So, they ask, how is it that these activities comprise adaptation to climate change?

In most cases, the policies, strategies and measures in place to deal with current climate-related issues are designed according to past climate trends, and in order to achieve a specified level of performance. The problem is that, as the climate changes, current systems may not continue to provide the level of performance to which we are accustomed. As we have seen from the examples above and elsewhere, the consequences can be profound.

We can think of adaptation as both a process and as an output. It is the process by which we examine how climate change is likely to affect us and determine how to respond appropriately. The output is the response. As a very simple example, if water conservation is a current measure, *more* water conservation would be an adaptation option in response to increasingly frequent or severe drought-like conditions as a result of climate change.

Getting Started – A Municipal Perspective

For a variety of reasons, and despite the various “adaptations” alluded to above, municipalities (like most other sec-

tors and organizations) have not yet been aggressive on adapting to climate change. First, the notion of “adapting to climate change” is not widely understood in the municipal sector, either conceptually or in practice. Few, if any, municipal staff have explicit responsibilities for adapting.

Because climate change is so complex, and climate projections are uncertain, it is not always clear precisely what we are adapting to.

The implications of climate change are debatable, and the decision process may involve multiple stakeholders with conflicting values and competing interests. Numerous adaptation responses will exist, and they will generally be evaluated as “better” or “worse,” not “right” or “wrong.” In this decision environment, doing adaptation is very complex, and simply getting started can be a real challenge.

Fortunately, some municipalities *have* gotten started. Two of the key factors to their success are:

- ▶ individuals recognize the importance and relevance of climate change to existing priorities and champion the issue; and
 - ▶ the adaptation problem is framed in terms of issues that are relevant and actionable, given each municipality’s particular circumstances.
- Since it is nobody’s job to adapt (according to their

role description), it is not surprising that adaptation is not on the to-do list. In many cases, municipal staff are so overwhelmed with current responsibilities that it is difficult to pursue the adaptation issue. In order to pursue it, they would need to prioritize adaptation over – and thereby displace – an existing responsibility. But, with little or no time to preparing the business case, simply getting this far can be a challenge. It is a classic chicken and egg problem.

In fact, adapting to climate change is a responsibility that will be borne by many individuals and roles. Adaptation should not be viewed as a standalone activity, separate from ongoing planning and management. Good water management is good water management; good planning is good planning; and good emergency preparedness is good emergency preparedness. The difference between those activities in the past and those activities in the present and future is that, in order to be good, they will need to account for, and be adapted to, changed climate conditions.

Integrated Approach

In the municipalities that have initiated an adaptation process, individuals have come to realize exactly this point – in order to achieve established (climate-sensitive) objectives, they need to account for climate change. For example, in order to ensure a reliable long-term water supply, the effects of climate change on groundwater supply must be considered, in addition to the demand pressures from population growth and other factors. These individuals recognize that climate change is an important issue and identify the contextual factors that make certain aspects of climate change relevant for them. Importantly, they build bridges across departments and to outside organizations, to pull together the people, information and other resources required to better understand how climate change is relevant to the municipality, and what the municipality can and should do about it.

The way the adaptation problem is framed has also been an important factor. On several occasions, I have heard, comments along the lines of “Until you can tell me precisely

what it is that I am adapting to, I can’t adapt.” It will be a long time, if ever, before we can specify a future climate with such precision. Just look at our weather forecasting, and we have been at that for over 100 years! Unfortunately, we can’t afford to wait that long.

Reframing the Issue

Again, by looking at some of the municipalities that have initiated adaptation processes, we see different ways of framing the adaptation problem, each suited to particular circumstances. For example, the problem has been framed in terms of:

- ▶ How might climate change affect the municipality’s ability to achieve the targets set out in the environmental strategic plan?
- ▶ Will we have to invest in new supply infrastructure sooner as a result of reduced groundwater levels because of climate change? By how much sooner?
- ▶ When we completed the hazard identification and risk assessment (as required, for example, by all Ontario municipalities under the *Emergency Management Act 2003*), did we adequately account for the frequencies and severities of hazards we might see as a result of climate change?

By framing adaptation in terms of issues that are relevant for them, people are able to integrate adaptation into their ongoing activities. And, importantly, the problem definition shapes the approach and type of information required to address the problem. Answering “What are the impacts of climate change on me?” and “How should I adapt?” can be very difficult, due to uncertainties, long time frames, complex and interacting factors, and a variety of other reasons. But, when framed in some other ways, the climate change problem can sometimes be tackled and addressed in more practicable ways.

Perhaps the most pressing need for reframing the issue of adapting to climate change is with respect to uncertainty. Uncertainties, or perceptions of uncertainty, have delayed action on climate change for years. There is no doubt that our climate is changing, and that climate change is a problem now. Although uncertainties exist, we are almost certain that our climate will deliver more shocks, and that our communities need to be more resilient to these shocks.

That’s the challenge. MW

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