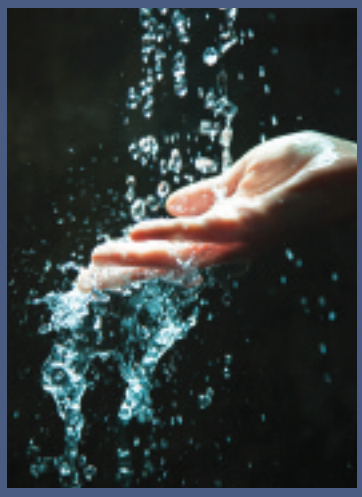
WATER SECURITY: CANADA'S CHALLENGE

Karen Bakker



Can Canadians count on long-term, steady access to sufficient supplies of water that is of acceptable quality for humans without damaging the environment? No, writes Karen Bakker: "Simply put, our water is not secure," she says. "The wild card in the water world is climate change, which most experts predict will exacerbate water quality and water availability problems." But Canada, she insists, has the capacity to respond to this challenge. In this article, she assesses the state of Canada's water, summarizes what we should worry about, explains how we got into this situation, and suggests a few key strategies that would get us out of it.

Les Canadiens peuvent-ils compter à long terme sur un accès durable à une eau de qualité acceptable pour les humains et l'environnement ? Non, croit Karen Bakker : « En deux mots, notre eau n'est pas sûre. » De plus, les changements climatiques, « dont la plupart des experts prédisent qu'ils exacerberont les problèmes de qualité et de disponibilité de l'eau » rendent la situation encore plus imprévisible. Mais le Canada a les moyens de relever ce défi, estime l'auteure dans cet article où elle évalue l'état des eaux canadiennes, précise les sources d'inquiétude à prendre en compte, explique comment nous avons laissé la situation se dégrader et propose quelques stratégies clés pour la redresser.

The truth about Canada's water might surprise you. According to Environment Canada, 25 percent of Canadian communities experienced water shortages during the latter half of the 1990s. Water quality in over a thousand small and rural communities — some just a 30-minute drive from major cities such as Vancouver — can be as bad as or worse than that in developing countries. This does not include the 100-plus First Nations communities that live with permanent boil-water advisories. The effects of decades of under-investment in water treatment networks are now apparent: over the next two decades, it will cost an estimated $100 billion to replace Canada's aging sewage networks. Over 10 million Canadians depend on groundwater for drinking, but our groundwater reserves are not even completely mapped, and groundwater quality monitoring is variable, to say the least.

A recent report by the Senate Standing Committee on Energy, Environment, and Natural Resources termed the management of Canada's water "shocking" and "unacceptable," a view with which many of the contributors to this special issue would agree. Other reports from the Office of the Auditor General, the Council of Canadian Academies, the National Water Resources Institute, The Conference Board of Canada and the FLOW Canada network of independent water experts have also suggested that Canadians are not adequately protected from floods, water shortages and other water-related hazards. They warn that our legislative and governance frameworks are not robust enough to effectively manage domestic and international water issues.

What is it, exactly, that these observers are worried about? Some warn of water quality tragedies like that in the Ontario town of Walkerton, in 2000, in which 2,500 people became seriously ill and at least 7 died. Others warn of water scarcity, particularly in the West, and point to coming struggles between rural and urban dwellers for dwindling water resources. For others, the key security challenge is threats to water quality, from a range of sources: exotic species imports through ballast and migration, or the set of new pollutants — the chemical cocktail of compounds found in everything from sunscreen to prescription medications — whose effects and interactions within the water cycle are only now being teased apart by scientists. Still others warn of our vulnerability to water exports under NAFTA. Simply put, our water is not secure: we lack long-term sustainable access to sufficient supplies of water of acceptable quality for humans and the environment.

The wild card in the water world is climate change, which most experts predict will exacerbate water quality and water availability problems. Demand will increase, while changes in

rainfall patterns and increased evapotranspiration will reduce resource availability. The likely result will be an increase in water-stressed areas across Canada: a real challenge for rapidly growing regions with drier climates, where future demands are likely to exceed capacity (and in some cases, like the South Saskatchewan, already do). With less water quantity, quality will suffer, as pollutants are less diluted and ecological functions of streams and lakes are altered. Reduced glacier melt from the Rockies will negatively affect the flow and quality of streams and rivers, and thus reduce water supply available to cities across the Prairies.

The situation is not, of course, entirely negative. Canada has the capacity to respond to our water security challenge; many regions of the world are not so lucky. But we are not responding consistently. Whereas some provincial governments (they bear constitutional responsibility for water supply) have been taking bold steps in reforming water policy (as discussed below), others have not. Canada's federal water policy has not been updated since 1987 — before many of today's challenges were well understood. Put this together with the failure of the federal government to implement effective water policy in matters under its jurisdiction, and we see the results of the disastrous recipe for inaction that has plagued water management in Canada for the past few decades.

How did we get ourselves into this situation? There are three main factors. Our myth of water abundance is the first problem: for a long time, Canada's water was managed on the assumption of unlimited abundance. It was not metered, and priced low. As a result, we use more water per capita than any nation in the world except the US. But we have only 6.5 percent of the world's annual renewable fresh water resources, and much of our accessible water flows north to areas relatively remote from population centres in southern Canada. We are not the world's "Kuwait of water," as media outlets (and, sadly, politicians) all too often suggest. The water that we do have is left over from glacier melt, but is renewed very slowly. Even a small change to renewal rates can have a dramatic impact: think of the transportation difficulties posed by recent drops in Great Lakes levels.

Second, we have also tended to assume that water resources can be diverted to suit human purposes with little regard for environmental consequences. Canada is one of the largest diverters of water in the world (particularly for hydro power). Industrial demands are another factor, and the impacts can be enormous. For example, somewhere between 2.5 and 4 barrels of water are used to produce every barrel of oil in the Alberta tar sands.

In many Canadian jurisdictions, water quality and conservation regulations are weaker than those of the US or the European Union. Indeed, we are one of the few industrialized countries in the world not to have legally enforceable drinking water quality standards. The federal government merely sets guidelines — which not all provinces follow. In some provinces, the best source for comparative data on water quality is (astoundingly) a not-for-profit environmental law organization (Ecojustice) which has produced a well-publicized series of "National Report Cards" on sewerage and drinking water quality.

Third, Canada is mired in provincial-federal turf wars over resource management. Fisheries, navigation and international waters are federal responsibilities, yet water resources and water supply are provincial responsibilities. Water supply is, in turn, usually municipally managed, and is as a result more decentralized than other utility sectors.

These governance issues further complicate an already complex debate over how best to meet water quality, environmental protection and public health goals in an era of public sector fiscal constraints. In the context of strained federal-provincial relations and provincial assertions of sovereignty, increased federal involvement in water management is not perceived to be appropriate or desirable by some stakeholders. And the federal government is, at times, overly cautious about fulfilling its mandate, as evidenced, for example, by its initial reluctance to be involved in the negotiations over the controversial revisions to the Great Lakes Charter in 2001, despite repeated referrals of bulk water export issues to the federal government by provincial governments.

As a result, water is prey (perhaps more than any other resource) to what UBC political scientist Kathryn Harrison terms "passing the buck" on environmental policy. Attempts to manage water effectively are undermined by a lack of intergovernmental coordination, duplication of efforts, poor data collection and inadequate monitoring and enforcement. To give a simple example, there are approximately 275 freshwater-related indicators in Canada that have been compiled by federal and provincial agencies, plus numerous others that have been developed by municipalities and NGOs. But there is no central repository for this information, and no pan-Canadian framework to standardize reporting efforts. As a result, it is impossible to comprehensively and easily assess the state of water security across Canada.

The contrast with countries such as Australia, the United Kingdom and the

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United States — where national agencies provide centralized, easily accessible and often free data — is stark. The United States Geological Survey, for instance, has a network of 1.5 million hydrometric sites (for data-gathering on water). In contrast, Water Survey Canada's Hydrometric Program operates just a few thousand. A StatsCan report released this June notes the challenges for determining water yield given our sparse (to put it mildly) network of hydrometric observations, particularly in the North.

In the absence of reliable monitoring, it is no surprise that enforcement is patchy. To give just one example: there were 1,900 recorded violations of water pollution laws in Ontario in 2000, but charges were laid in only 4 cases. The protection of local water sources often falls to community groups, who carry out volunteer water quality monitoring. In some cases (like the Waterkeepers), community groups have adopted a more vigilante-style approach, patrolling waterways, monitoring suspected pollution violations, and encouraging concerned citizens to come forward with tips on law-breaking polluters — both governments and private companies. These groups have set themselves a daunting task given that current legislation requires strong evidence from citizens before governments will act on claims of violations. But they are in some places the best (and in others the only) monitoring system that we have.

All of the above suggests that we need to do something, and fast, about the state of Canada's water. And there is some good news on the horizon. The need to improve water management — and deal with the underlying governance issues — has driven intense debate and innovation at the provincial level over the past few years. Leading not-for-profit organizations (the Council of Canadians) and environmental think tanks (Canadian Environmental Law Association, Friends of the Earth, Ecojustice) have launched high-profile water campaigns, as has the country's largest union (the Canadian Union of Public Employees). Provincial governments have revised legislation and introduced welcome innovations in water management, such as Alberta's Water for Life strategy, Quebec's new citizen-run participatory "watershed organizations," and Ontario's requirements for full-cost pricing and accounting for water supply infrastructure. Several provinces, including Manitoba, Ontario and Quebec, have revamped water quality standards and monitoring. And Manitoba has even created a provincial ministry dedicated to the integrated oversight of water issues — the only one of its kind in Canada.

These are good initiatives. They all attempt to grapple with the fact that water, by its very nature, presents managers with three issues that are difficult to resolve: competition between users of water resources; vertical coordination between the multiple scales at which water is used and managed; and mismatch between geopolitical and administrative boundaries, on the one hand, and hydrological boundaries on the other. These issues flow, in part, from the fact that water is a multi-purpose resource, which implies that multiple sets of users will operate at different scales.

In turn, this creates competing uses and diverse views of stakeholders within the policy debate. For example, cities sit within watersheds, and the water within cities is often the subject of competing claims both upstream and downstream: industrial, tourism, amenity, residential, agricultural and resource (e.g., hunting and fishing) uses. The debate over the Oak Ridges Moraine (north of Toronto) is one such example, but there are many across the country.

The competing views of water underlying these debates are not

BOX 1. DID YOU KNOW? CANADIAN WATER FACTS AND FIGURES

- 6.5 percent: Canada's percentage of the world's renewable water resources.
- 7 percent: Canada's proportion of the world's land mass.

Is Canada's drinking water well governed?

- 1,766: The number of active boil-water advisories in place in Canada (March 2008). The provinces with the most advisories were Ontario (649) and British Columbia (530). Some have been in place for more than 10 years.
- 75 percent: the proportion of First Nations communities that live with a "significant risk to the quality or safety of drinking water."
- 29: The number of bottled water product recalls in Canada since 2000.
- 240 to 10,000 times: The average price of bottled water in Canada compared to the average price of municipal tap water.
- 10: The number of federal departments or agencies with jurisdiction over some aspect of water.
- 10: The number of different sets of drinking water standards among Canada's provinces and territories. Only Alberta, Manitoba, and Nova Scotia have fully adopted the Canadian Drinking Water Quality Guidelines as set out by Health Canada.

Are Canadians water wasters?

- 329 litres: average individual water consumption per day in Canada in 2004.
- 266 litres: average individual water consumption per day in municipalities that charged volume-based fees for water in 2004.
- 467 litres: average individual water consumption per day in municipalities that charged a flat or fixed rate in 2004.
- 1,420 cubic metres: average use of water per person per year in Canada (1.42 million litres). This is more than twice the average in France, and is 65 percent above the OECD average (OECD 2005). Only the United States uses more water per capita than Canada.
- US$0.70/1000 L: average Canadian municipal water prices in 1999, the lowest in the OECD.

Assembled by Alice Cohen and Christina Cook.

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easily reconcilable at the local scale. One view, often expressed by industry, is that water is a resource to be exploited, processed, traded and dealt with as any other commercial asset. Another view, often expressed through public interest groups, is that water is an inherently shared "social asset" vital to ecological and human health. The relative degree of power and legitimacy of these groups within the policy-making process is disputed over a range of issues such as participation in decision-making, the types of information that decision-makers employ (or discount); and accountability for decision-making.

The water governance "crisis" stems, in part, from an inability of governments to negotiate these views and associated conflicts over water, and to establish a politically legitimate and coordinated governance framework. In some cases, local, provincial and territorial governments lack financial and human resources to deal with these conflicts: basic data collection on groundwater, for example, varies considerably across the country. And many freshwater bodies — both surface and groundwater — cross provincial and territorial boundaries. For these and other reasons, without an overarching governance framework for water in Canada — like that which exists in other G7 countries — our water governance crisis will not be resolved unless we take coordinated action at the national level.

The federal government should commit to fulfilling the full scope of its water-related responsibilities. A first step should be to fund basic water and climate observation programs. A second step should be to update and implement Canada's 1987 Federal Water Policy.

We need a country-wide Water Strategy: a new governance framework that enables provincial and federal levels of government to work together to streamline and strengthen policies and legislation, while enforcing existing water legislation.

So what should we do? There are a few key strategies on which most observers agree.

First, the federal government should commit to fulfilling the full scope of its water-related responsibilities. A first step should be to fund basic water and climate observation programs. A second step should be to update and *implement* Canada's 1987 Federal Water Policy (which has never been implemented).

Second, we need a country-wide Water Strategy: a new governance framework that enables provincial and federal levels of government to work together to streamline and strengthen policies and legislation, while enforcing existing water legislation (something akin to this existed in the 1970s, but was not sustained). An excellent discussion of the approach to developing such a strategy was recently produced by the Forum for Leadership on Water in their report Changing the Flow. Part of this strategy should be the reinvigoration of water-related scientific expertise, a domain in which Canada was a world leader in the mid-20th century. Aboriginal water rights — the legal recognition of which is much stronger now than 20 years ago — also require attention. And finally Canada needs a national safe drinking water act that standardizes water quality requirements and provides for an acceptable degree of monitoring and enforcement.

Third, the Strategy should support sustainable water management approaches which encourage conservation and environmental protection as a means of achieving water security. There are many existing examples, piece-meal, across the country thatcould provide a basis for such an approach: Ontario's water legislation on source protection, conservation and sustainable financing, for example. Climate change will likely force this upon many communities, whether we like it or not. But by planning now, we will make conservation strategies more efficient, effective and equitable. Now is the time, for example, to start integrating water valuation and pricing with water permitting and allocations systems.

Fourth, and also as part of the Water Strategy, a coordinated approach to sharing lessons learned about water governance across provinces and territories should be implemented by the federal government. Valuable lessons learned from innovations across Canada are rarely shared, but they should be. The ongoing experiments with delegated water governance in Alberta and Quebec, for example, merit nation-wide attention.

Fifth, consideration should be given to the creation of a human right to water in Canada. It might come as a surprise to learn that no such right exists within Canada, or indeed within the main UN conventions on human rights (although other elements of international law do suggest that such a right exists). The international campaign for a human right to water has gained considerable momentum over the past few years, but the Canadian federal government has been one of the most consistently outspoken opponents of this right in the international arena. Many express surprise that this should be the case. But they are usually unaware of Canada's domestic water woes, and our seeming inability to resolve them.

Karen Bakker is the director of the University of British Columbia's Program on Water Governance, and the author of Eau Canada: The Future of Canada's Water *(UBC Press, 2007). Her research on water security is currently funded by the Canadian Water Network.*