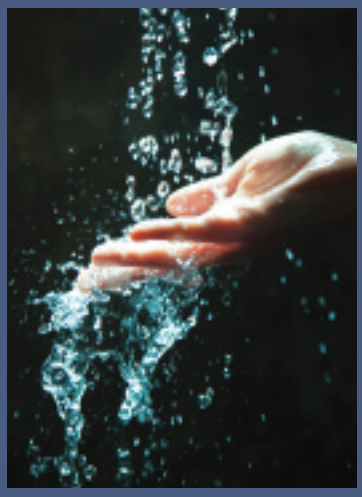
WATER PRICING: INFRASTRUCTURE GRANTS HINDER NECESSARY REFORM

Steven Renzetti and Colin Busby



Canadians are the heaviest water consumers in the world and this, according to Steven Renzetti and Colin Busby, is the immediate consequence of low water prices. In this article, they critically examine Canadian pricing policies and argue that current practices lead to overconsumption, inadequate conservation and lack of innovation. They also examine how capital grants from senior governments reinforce these inefficiencies: "recent injections of cash to build and repair municipal water and wastewater infrastructure, in spite of any desirable short-run economic effects, may only put off addressing other overarching problems." They look at recent data that suggests some progress is being made and they review the further steps needed to improve Canada's record. "The main challenge in reforming water prices is to provide the correct signal to consumers of supply costs while avoiding any potential negative effects on low-income households."

Les Canadiens sont les plus grands consommateurs d'eau du monde, notent Steven Renzetti et Colin Busby, qui y voient une conséquence directe du faible prix de l'eau au pays. Ils jettent ici un œil critique sur les politiques de prix présentement en vigueur au Canada et soutiennent qu'elles favorisent la surconsommation, nuisent à la conservation adéquate de l'eau et découragent l'innovation. Ils expliquent aussi comment les subventions consenties pour les infrastructures aggravent les inefficiences. Bien que de récentes données laissent entrevoir certains progrès, les auteurs définissent les étapes à franchir en vue d'améliorer le bilan du Canada en la matière. « Pour réformer les prix de l'eau, concluent-ils, le premier défi consiste à donner aux consommateurs l'heure juste sur le coût, tout en évitant les effets négatifs sur les ménages à faible revenu. »

Canada's municipal water suppliers have numerous well-known operational shortcomings. These include incomplete cost accounting, underpricing, inadequate metering and a lack of emphasis on conservation. This ultimately promotes excessive consumption, overextended infrastructure, stifled innovation and diminished water quality.

What is not perhaps well understood, however, is that the infrequent and unpredictable infusions of capital funding from senior levels of government — such as those in the 2009 federal and provincial budget rounds — may be exacerbating the problems in this sector. A critical assessment of Canadian water agencies' pricing and investment practices is better informed by an emphasis on the role that senior governments' capital grants have in influencing such practices. Recent injections of cash to build and repair municipal water and wastewater infrastructure, in spite of any desirable short-run economic effects, may only put off addressing other overarching problems.

Most Canadian municipal water agencies fail to employ water prices as a policy instrument to signal scarcity or efficient water use. Individual municipalities face unique water supply conditions at given times of the year, and the cost of withdrawing, filtering and delivering water to households and businesses varies based on distance and quality of freshwater available. An efficient public pricing framework should therefore charge the appropriate usage fees to water users.

Yet, about one-quarter of Canada's population pays a flat rate for water use. With a preset monthly fee, flat-rate water users can consume unlimited amounts for no extra cost. In contrast, the other three-quarters of Canadians pay a specific price for each cubic metre of water used. For most areas, prices are constant for each unit of water consumed, but in some instances prices rise or fall with each additional unit of water use.

Water prices are set at levels that produce annual revenues that fall short of expenditures. In 2007, for example, aggregate revenues from Canadian water agencies covered only 70 percent of total expenditures. The inability to cover expenditures stems from water agencies' failure to properly account for costs such as the backlog of repairs, capital costs and environmental damages arising from sewage operations

Improperly set prices not only fail to provide the necessary revenues for the large development and maintenance costs associated with water and wastewater infrastructure, but also distort the signal to policy-makers regarding the demand for public infrastructure, and therefore hinder sound long-term capital planning.

Figure 1 provides recent data on the average prices (measured in dollars per cubic metre) of municipal water across OECD countries. The figure demonstrates that Canadian water prices are remarkably low by international standards. Though Canadian water agencies use technologies similar to those of other advanced countries, and the proximity of Canada's major urban centres to water sources is the same in much of northern Europe, Canadian prices are about one-fifth of the levels charged in Germany and one-quarter of those charged in France according to the most recent measurements.

Figure 1 also illustrates that consumers respond to permanent changes in water prices. With few exceptions, higher prices typically lead to lower levels of water use. Thus, while households across the globe require a minimum amount of water for survival, higher prices influence water use patterns and encourage conservation and increased efficiency. Hence, the immediate and lasting consequences from low water prices are obvious: Canada encourages its households and businesses to rely heavily on water use. This, in turn, leads to overconsumption, inadequate conservation and a lack of innovation.

Capital grants from senior levels of government can reinforce these inefficient and unsustainable practices. The documented overuse of water is made possible when water agencies overexpand the size of their supply networks, a practice facilitated by the past and current infusions of infrastructure grants from provincial and federal governments that are accompanied by few, if any, requirements for accounting or pricing reforms.

In water-scarce environments, underpricing typically leads to shortages and unreliable service. In a relatively water-rich environment such as exists in parts of Canada, underpricing, combined with overexpansion of supply networks, has led to little or no reduction in the available supply of water or in the reliability of service. Thus, the strongest signal of inadequate pricing — shortages — has been nullified by water agencies' unwavering commitment to supply whatever demand arises at the going price.

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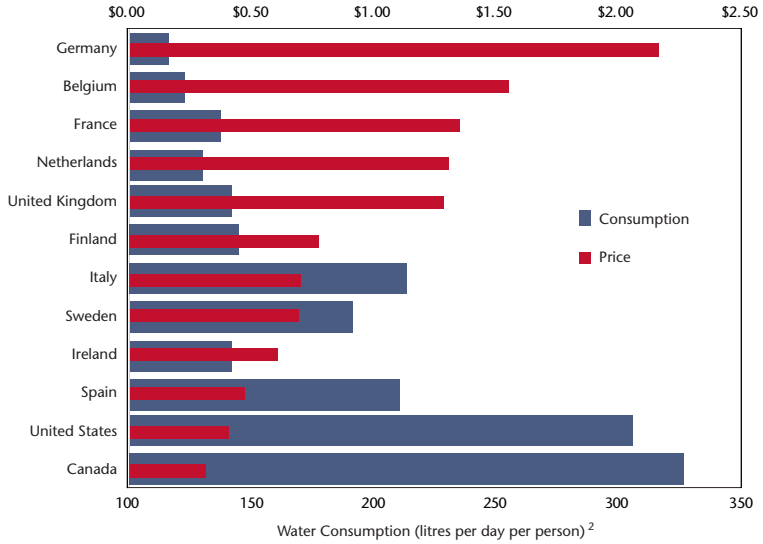
It is important to understand the "feedbacks" between prices, demands, infrastructure planning and investment that are necessary for efficient water agency operations. Fully measured capital and operating costs lead to efficient prices, which, in turn, determine water demands. These demands signal to agencies when expansions to existing capacity are called for. Thus, local decision-makers simply won't know how much public infrastructure is required without the right price signal, and while grants assist with building or maintaining the stock of water infrastructure, they often do not properly encourage municipalities to fix a pricing problem — in fact, they encourage municipalities to keep the status quo.

The unfortunate circumstances of current municipal infrastructure funding began to more formally develop in 2003 when the federal budget, in a position of surplus, devoted $1 billion to municipal projects over ten years, which was then reduced to five years in budget year 2004. Budget year 2005 saw municipalities being awarded a more stable source of grant funding by sharing some of the revenue from the federal fuel tax; it also saw

FIGURE 1. WATER PRICE IN SELECTED COUNTRIES (DOLLARS PER CUBIC METRE)[1]



Source: Council of Canadian Academies' Expert Panel on Groundwater (2009). "Sustainable Management of Groundwater in Canada."
[1] purchasing power parity

the creation of the Municipal Rural Infrastructure Fund.

Since then, most federal initiatives roll up under the Building Canada Fund and the stimulus measures of the 2009 budget. Importantly, these initiatives, though trending upwards in size and scope, are projected to wind down in future years. The risk is that they delay the obvious changes in terms of improved charges for direct use of municipal services, such as water and wastewater infrastructure, and thereby raise the costs of future reforms.

Investments in water infrastructure work best when those who benefit from the resulting services are the ones who pay for it. Not only do these infusions of capital grants break the link between pricing and the quality of service, but they also directly promote underpricing. This is true because the capital funding takes the form of grants rather than loans. Thus, residents living in cities and towns lucky or well connected enough to receive grants have their water use directly subsidized by taxes raised in the rest of Canada.

Capital grant programs are frequently used as tools of macroeconomic stimulus during economic slowdowns — which emphasize long-run productivity gains and positive short-run spillover effects. But the use of capital grants has also grown in popularity during periods of economic expansion.

During the last decade of fiscal surpluses, senior governments' pattern of annual higher-than-expected surpluses would often lead to large, lump-sum transfers at fiscal years' end, further undermining any chance for municipalities to secure a predictable base for capital planning. Hence, in both good times and bad, there has rarely been an effort by federal or provincial governments to impose conditions on municipalities to reform their cost accounting, introduce demand-management practices or raise prices. On the one hand, these conditions would promote uniform best practices across Canadian municipalities. On the other hand, there is the potential drawback that this would lead to reduced municipal autonomy, as senior governments can impose their own wishes on municipal spending.

There is a final effect on municipal governments of an increasing dependence on capital grants. It is quite possible and rational for some Canadian municipalities to "game" the political system by delaying or even avoiding needed maintenance and repairs. A municipality would do this if it anticipated that political or economic circumstances would likely lead a senior government to provide funds for infrastructure repairs. This possibility is reinforced by the municipality's knowledge that every other municipality has the same incentives and that the municipality with the greatest apparent need is most likely to get infrastructure dollars. Thus, who can blame any city or town in Canada for avoiding angering its residents with a hike in water rates in the hope that funding from Ottawa will do the job for it?

In 1991, only about half of Canadian households had water meters in their homes. Coverage has slowly increased, to about 63 percent by 2004. Still, about one-third of households are without water meters. Most of them are in eastern Canada — Newfoundland and Labrador, Prince Edward Island and Quebec.

The most recent data suggest that moderate progress is taking place. For instance, in 1991, only about half of Canadian households had water meters in their homes. Coverage has slowly increased, to about 63 percent by 2004. Still, about one-third of households are without water meters. Most of them are in eastern Canada — Newfoundland and Labrador, Prince Edward Island and Quebec.

Water prices are slowly increasing. Real residential water prices rose at an average annual rate over the period 1991-99 of approximately 2 percent per year, but rose at an annual rate of 5.5 percent over the 1999-2004 period.

BOX 1. THE IMPACT OF REFORMING WATER PRICES

Raising water (and sewerage) prices so that they reflect the full cost of service would have several trade-offs. Customers who live far from their supply source and use large quantities of water during peak periods would see their water bills rise. How much? Unfortunately, there's limited evidence to answer this question, but a doubling of water and sewage bills for heavy users is indeed possible.

On the other hand, some customers would benefit from reformed water rates. Households that use less than the average amounts of water, such as seniors or small families, but pay flat rates — a fixed charge levied independent of the level of water use — would likely have to pay lower water bills. Similarly, businesses that use relatively little water would likely face lower water bills.

It's important to bear in mind, however, that any household can reduce the impact of rate increases by conserving and investing in water efficient fixtures and appliances. And many taxpayers would benefit from the reduced subsidies and grants being paid currently to water agencies by municipal, provincial and federal governments.

Finally, the environment would also gain: reductions in water use and associated sewage flows would mean lowered water withdrawals and reduced pollution loadings from sewage treatment plants.

As with all reforms there are winners and losers, but the available empirical research demonstrates that the benefits of reforming water prices exceed the costs.

There is also some limited evidence of changes in some of the practices discussed in this article. Once it is implemented, Ontario's *Sustainable Water and Sewage Systems Act* will require full cost accounting by water and sewage agencies and the prices to recover these costs. Similarly, BC's Living Water Smart program requires that half of all new water must come from conservation and municipalities meeting efficiency targets.

There is even evidence of changes to federal capital granting programs. The Building Canada program supports water and other forms of infrastructure spending. The program criteria indicate that supported projects must be accompanied by efforts to improve the management of water and reduce demands. These requirements, however, are not present in the documents that set out the infrastructure spending contained in the federal 2009 budget, likely because of an overarching emphasis on the rapid commencement of projects.

The current set of practices related to municipal cost accounting, pricing investment spending, as well as the process for providing infrastructure grants, are unsustainable. Agencies' recorded costs do not accurately reflect the full costs to society and the environment of water supply and sewage treatment, prices do not inform consumers of the costs their water use implies at different times and locations, and federal and provincial grant formulas reinforce these practices while distorting municipal decision-making.

The most primitive step for implementing improved price-per-unit charges is to continue to move toward universal metering. In this vein, water agencies in Canada have much work to do.

With water use monitoring capacities in place, the most important near-term strategy is to adopt seasonal water pricing. This could be achieved by setting off-peak prices during winter, when demand is low, and setting peak prices in the summer, when demand is high. And to further increase effectiveness, these reforms should be combined with public education programs.

Next, municipalities should improve their costing methods to include all the costs incurred in supplying water. By not accounting for the longevity of capital assets and their interaction with the environment, water agencies do not fully reflect the cost of agency operations in annual expenditures. The need for more complete expenditure accounting was previously advocated by the 2002 Walkerton Inquiry and Ontario's 2005 Water Strategy Expert Panel, and it remains equally important today.

The main challenge in reforming water prices is to provide the correct signal to consumers of supply costs while avoiding any potential negative effects on low-income households. This can be accomplished by adopting "lifeline" water rates that do not charge for water needed for personal consumption. These rates would exempt relatively small volumes of water, as less than one-quarter of the average per capita residential water use in Canada, approximately 300 litres/day, is for personal consumption and hygiene. Alternatively, municipalities could adopt increasing block-rate charges, which charge higher prices for higher levels of consumption, and use the revenues generated to subsidize use by low-income consumers.

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Provincial and federal governments must also change how they provide infrastructure grants. The example of the Building Canada program — requiring reformed pricing practices and the promotion of conservation — should be extended to other water and sewerage grants. Doing this would reduce any incentives for municipalities to "game" the political system and would signal that macroeconomic stimulation measures need not be at odds with efficient water management practices.

Making the transition to a better water pricing system in Canada will not be without challenges. Water agencies' institutional capacity must be enhanced, full-cost accounting procedures must be developed and prices must be set efficiently and equitably.

Some of Ottawa's soon-to-be-injected funds will no doubt go to repairing neglected water infrastructures, but this will put only a temporary patch on the underlying pricing problem. Large, one-time transfers to municipalities mimic past measures that undermined scheduled infrastructure upgrades and, in fact, may encourage municipalities to put off long-overdue reforms. As our population grows and water use increases, Canada's water agencies must get the prices right to avoid potentially larger infrastructure shortfalls.

It is likely that municipalities would cry foul if federal and provincial grants were scaled back or cry came with conditions, because of the municipalities' narrow revenue-raising capabilities. However, to the extent that it is possible for users of municipal services to pay for the costs — as in the case of water — user-fee reforms are desirable. Further, municipalities' increasing reliance on grant funding may also leave many Canadians with a false impression as to which level of government is responsible for future water and wastewater infrastructure shortfalls when they appear. While the immediate relief from Ottawa is good news for water agencies, unless the overarching problem of water pricing is simultaneously addressed, Canadians will again see dilapidated pipes and sewers in the near future.

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