

BULK WATER EXPORTS, DIVERSIONS AND CONSERVATION

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One dimension of water conservation that has garnered periodic public and political attention over the last several decades is the protection of Canada's freshwater resources from bulk exports and large-scale diversions to other countries, most notably the United States. Mohammed Dore and Timothy Heinmiller outline the existing rules on bulk exports and diversions, as well as the existing economic incentives and opportunities to undertake bulk exports and diversions. They find that in most cases, bulk exports are legally prohibited and also economically unviable. Still, large-volume, long-distance diversions from the Great Lakes could be possible from Lake Michigan via the Chicago Diversion. Since there are no institutional mechanisms on which Canada can rely to stop such future diversions, the best strategy for Canada may be to rely on cooperation with the Great Lakes states to enforce sound principles of watershed management that require in-basin use.

L'exportation d'eau en vrac ou sa dérivation à grande échelle vers d'autres pays : voilà l'un des aspects de la question de la conservation de l'eau qui, au cours des dernières décennies, a régulièrement retenu l'attention du public et des politiciens. Dans cet article, Mohammed Dore et Timothy Heinmiller rappellent les règles actuelles sur l'exportation d'eau en vrac et la dérivation, de même que les incitatifs économiques qui pourraient ouvrir la voie à de telles entreprises. Ils notent que, dans la plupart des cas, l'exportation en vrac est interdite par la loi et non viable sur le plan économique. La dérivation à grande échelle et sur de longues distances de l'eau des Grands Lacs serait toutefois possible à partir du lac Michigan, via le détournement de Chicago. Comme il n'existe aucun mécanisme institutionnel auquel le Canada peut avoir recours pour empêcher ce type de dérivation, la meilleure stratégie serait de tabler sur la coopération avec les États américains du bassin des Grands Lacs pour faire respecter des normes claires touchant la gestion de ce bassin hydrologique.

Despite reforms and reassurances by Canadian governments, many Canadians remain concerned about the potential loss of Canadian water resources to foreign interests, particularly those south of the border either through commercial export or large-scale water diversions. These fears are rooted in a combination of factors, including the public's heightened awareness and sensitivity to environmental issues, lingering concerns about international trade agreements and their impact on Canadian sovereignty, the tendencies of the Bush administration toward international unilateralism, growing water shortages in parts of the American Southwest and Canadians' emotional attachment to water as part of the Canadian identity.

While there appear to be no imminent American designs on Canadian water, large-scale water trading is technologically feasible but not necessarily profitable. However, there is continuing concern about whether Canadian governments have the necessary institutional mechanisms to protect the integrity of water ecosystems. A number of institutions, laws and regulations have been developed to govern bulk exports and diversions, and the purpose of this article is to examine this web of rules to see if any significant gaps still remain.

Bulk water exports typically involve the transfer of water in large vessels, usually in ocean-going tanker ships. This is distinct from bottled water exports in which water is

exported in small containers, usually no more than 20 litres in size. Bottled water exports are already an accomplished fact between Canada and the United States, and Canadian governments have done very little to regulate or stem this trade because they regard it as environmentally nonthreatening, even though the neighbours of some

In the Great Lakes Basin, for instance, a small canal in upstate New York diverts modest amounts of water into the neighbouring Hudson River Basin, while a much larger canal at Chicago has the capacity to divert over 10,000 cubic feet per second (cfs) of Great Lakes water to the Mississippi Basin, but is currently limited by the US Supreme

regulations that are piecemeal and vulnerable to gaps and oversights.

Although environmentalist groups have consistently called for a federal policy that unequivocally bans bulk water exports from all Canadian water sources, and public opinion consistently seems to favour this approach, such a policy has not been forthcoming. The closest we have come was the 1987 *Canada Water Preservation Act*, a bill that would have banned water exports exceeding a volume of one cubic metre per second and would have created a licensing system to regulate water exports at or below this standard, but this bill died on the order paper with the calling of the 1988 federal election. While

Canadian governments have responded to fears about bulk exports and diversions by reforming and expanding their rules for the taking and transfer of water. But, between the domestic federal-provincial division of powers and international agreements such as the Boundary Waters Treaty and NAFTA, authority over bulk exports and diversions is considerably fragmented, resulting in policies and regulations that are piecemeal and vulnerable to gaps and oversights.

water-bottling operations continue to complain about overdrawn aquifers.

Bulk exports, in contrast, have so far been prevented although export attempts have been made. In the late 1990s, companies in BC, Ontario and Newfoundland obtained approval from their governments to begin various bulk export projects, only to have these permits rescinded after vociferous public objections. Nevertheless, bulk exports do occur in various parts of the world — Korea, Taiwan, northern Cyprus, the Bahamas and some Japanese islands all import water using tanker ships — and so some entrepreneurs have raised the prospects of such exports being undertaken between Canada and the US.

Diversions are different from bulk exports because they transfer large amounts of water through canals or pipelines, either for large consumptive water uses within internationally shared river basins or from shared basins to other parts of the continent. For those concerned with Canadian water, diversions are more threatening than bulk exports in two ways: (1) they are capable of transferring far larger amounts of Canadian water southward; and (2) a number of diversion structures are already in place and operating below their maximum capacity.

Court to diverting only 3,107 cfs. Other, much larger diversion schemes have also been proposed in the past, but have gained little political traction. For instance, the GRAND Canal scheme, first proposed by Canadian mining engineer Thomas Kierans in 1960, would have reversed the rivers flowing naturally into James Bay, raising Great Lakes water levels and providing water for the American Southwest through a series of planned canals. While such grandiose international diversion schemes have been a political nonstarter in Canada, they are technologically possible and their mere existence is enough to raise concerns for many Canadians.

Particularly over the past decade, Canadian governments have responded to fears about bulk exports and diversions by reforming and expanding their rules for the taking and transfer of water. However, these efforts have been greatly complicated by the fragmented institutional context in which bulk exports and diversions are governed. Between the domestic federal-provincial division of powers and international agreements such as the Boundary Waters Treaty and NAFTA, authority over bulk exports and diversions is considerably fragmented, resulting in policies and

some have questioned whether federal politicians may be secretly interested in leaving the door open to future bulk exports, when the demand for water may be stronger and the price higher, a more practical explanation for Ottawa's limited action on bulk exports is its limited jurisdictional authority on this issue.

In section 109 of the *Constitution Act, 1867*, the provinces were granted proprietary rights over all publicly owned "lands, mines, minerals and royalties," notwithstanding those specifically reserved to the federal government. Though water is not explicitly mentioned in section 109, common-law principles grant the provinces primary exploitative rights to this resource based on their ownership of the land underlying and adjacent to most of the freshwater resources within their borders. In practical policy terms, this means that the provinces have the authority to license and sell most of the fresh water within their borders for any conceivable use, including export, limiting the federal government's ability to regulate bulk exports at their source. The most important exception to this rule is in *internationally* shared waters, such as Canada's portion of the Great Lakes, where Ottawa can claim jurisdiction by virtue of its international relations power (section 132) and regulate

MAJOR AND MINOR WATER DIVERSIONS FROM THE GREAT LAKES



Source: International Joint Commission.

Map of major and minor interbasin and intrabasin diversions in the Great Lakes region. "Diversions can only be regulated through international agreements and institutions," say Mohammed Dore and Timothy Heinmiller. "In other words, the main objective of diversion regulation for Canadians is to preempt American unilateralism in the diversion of shared waters."

water-takings at their source for the purposes of export.

Ottawa's international relations power also provides it with the authority to regulate bulk water exports at the border, as part of Canadian trade flows, but this authority has been significantly circumscribed by the introduction of free trade. Although there is disagreement among experts about the applicability of NAFTA to water, the most widely accepted interpretation is that NAFTA does not apply to water in its "natural state" in lakes, rivers, and aquifers. However, when water is extracted from its natural state, containerized and traded, as in the case of bulk exports, it becomes an economic good subject to NAFTA rules. Under NAFTA, export controls are regarded as trade restrictive and are prohibited, effectively nullifying the federal government's primary constitutional authority

for regulating bulk water exports. This is why the *Canada Water Preservation Act*, which would have been feasible prior to free trade, has not been replicated in the post-free trade era. Hence, the accepted approach is to shy away from any explicit export ban, treating all water removals as an environmental matter that is outside the purview of NAFTA.

All of this has meant that bulk water exports have had to be regulated at their source rather than at the border, and, as a result, all 11 Canadian provincial governments have necessarily been involved. In 1999-2000, the federal government led an effort to forge a national accord on bulk export regulation, but this fell apart when a number of provinces steadfastly refused to allow any federal involvement in an area of resource regulation. Instead, nine of the ten

provinces emulated a policy model originating in BC and instituted bans on out-of-basin or out-of-province water removals in containers larger than 20 to 30 litres. At the same time, the federal government made amendments to regulations in the *International Boundary Waters Treaty Act* to restrict bulk removals for any purpose, including export, from the Canadian portion of boundary basins.

Altogether, these reforms have preempted the commencement of bulk water exports and, despite their fragmented nature, provide significant regulatory obstacles to any future bulk export proposals. However, some gaps and vulnerabilities remain. New Brunswick remains the only province without a ban on bulk exports, and the rules that exist in other jurisdictions could be overturned by future governments. The issue of bulk water removals

was most recently highlighted at the federal level in a Senate bill (S-217) introduced in May 2007 that would require the consent of both the House of Commons and the Senate should regulations to the *International Boundary Waters Treaty Act* be changed. If S-217 becomes law, it would reduce any discretion that ministers may have in using the regulations to sanction bulk water removals, as the prohibition would now be embodied in statute.

While existing government policies make it difficult to commence bulk exports, there appears to be little economic rationale for private entrepreneurs to want to undertake bulk exports in the first place.

In a recent paper Dore examined the economic rationale for bulk water exports using single-hulled tankers and came to the conclusion that the economic case for water exported in tankers depended on the transportation cost versus the costs of desalination. But a short-term opportunity existed. The circumstances that created a possible opportunity to carry bulk water by tanker can be traced to the *Exxon Valdez* disaster. On March 24, 1989, this oil tanker struck Bligh Reef in Prince William Sound, Alaska, spilling approximately 40 million litres of crude oil into the sea and onto the Alaskan coast. The oil spill was the largest in US history and caused a substantial amount of environmental damage.

To prevent such a disaster from occurring again, the US congress passed the *Oil Pollution Act* of 1990. Among other preventative measures, by this Act, all single-hulled oil tankers have to be replaced with double-hulled oil tankers by 2015. The impact of this Act has resulted in a collapse for the price of single-hulled oil tankers. This in turn, has substantially reduced the capital cost for starting a freshwater distribution firm using these single-hulled tankers. But the profitable opportunity is constrained by

the fact that there have been rapid declines in the cost of desalination technology, so that the options for water demanders now are to consider investing in desalination or relying on bulk water supplied by these tankers.

The decision to supply a population with fresh water by marine vessel(s) or to construct a reverse osmosis desalination facility can be determined by examining three critical factors: (a) the marine vessels travelling distance from the freshwater source to the population (b) the cost of capital and (c) the average expected utilization rate of the reverse osmosis desalination

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facility. Because of a change in the law for oil tankers, the existing supply of single-hulled tankers has become available, after minor refitting, for the transportation industry to deliver fresh water in bulk. Dore's analysis shows that the cost-effective range for an Ultra Large Crude Carrier class tanker is approximately 550 miles or 8 to 9 days of round-trip travel time. For any distances greater than that a reverse osmosis desalination plant becomes competitive as long as the rate of plant utilization is higher than 66 percent. Finally, there is also evidence that the expected cost of desalination is declining through technological improve-

ments and is forecast to decline further. Hence the opportunity to transport fresh water by marine vessel is likely to be a short-lived one. Perhaps it is for this reason that the cities of Santa Barbara in California and Tampa in Florida both rejected the bulk water imports in favour of building reverse osmosis desalination plants.

For Canadian governments, diversions are different from bulk exports because bulk exports can be regulated domestically, even with the impact of NAFTA, while diversions can be regulated only through international agreements and institutions. In other words, the main objective of diversion regulation for Canadians is to preempt American unilateralism in the diversion of shared waters. For just over a century, Canadian governments have pursued this objective through international agreements that have constructed a rule-based and constructive relationship on diversion issues. The most important agreement in this regard has been the 1909 Boundary Waters Treaty (BWT), which created a binational approval process for diversions from boundary waters, centred on the International Joint Commission (IJC). While the BWT continues to have relevance, a number of limitations in this treaty are becoming increasingly evident for Canadians concerned about water conservation.

Since its creation, the IJC has taken on important roles in the clean-up of Great Lakes waters and the investigation of transboundary environmental problems, but its core purpose remains the regulation of diversions in Canada-US boundary waters. When the BWT was negotiated, the centrepiece of the agreement was a cooperative approval process for any diversions proposed on one side of the border that would affect water levels on the other side. The approval process required the consent of the US President, the Canadian Prime

Minister and the IJC (an independent international body comprised of three American and three Canadian commissioners). Under this process, dozens of diversions have been approved over the past century, the vast majority for hydroelectric power generation. These diversions have altered natural watercourses but have not drained water away from shared boundary waters to other parts of the continent.

Although the BWT is often revered as a good example of close and productive Canada-US cooperation, and for good reason, it does have limitations that could be seriously detrimental to water conservation should the US become determined to undertake southward diversions from their shared northern basins.

One limitation of the BWT approval process is its restricted application to boundary waters only. Boundary waters are those rivers and lakes in which the Canada-US border lies, a definition that excludes most tributary and connecting waters. In the Great Lakes, for instance, Lakes Superior, Huron, Erie and Ontario are boundary waters where the treaty has effect, but Lake Michigan is a non-boundary water where the approval process does not apply, even though Lake Michigan and Lake Huron are, in hydrological terms, one water body. Clearly, diversions from American nonboundary waters can significantly impair water levels in the Canadian portions of shared basins, but nonboundary diversions are not subject to the BWT approval process. This means that the Canadian government has no institutionalized role in their regulation.

This is not to say, however, that Canadian input on nonboundary diversions is completely absent. Nonboundary diversions are mostly regulated by the state and provincial governments, and, in some basins, cooperative agreements on diversion approval standards have been reached. For instance, the 1985 Great Lakes

Charter and the 2005 Great Lakes-St. Lawrence River Basin Sustainable Waters Management Agreement set out terms by which the eight Great Lakes states and two Great Lakes provinces agree to evaluate large water-takings in Great Lakes non-boundary waters. While encouraging in principle, these agreements have been weak in practice as they lack any kind of meaningful enforcement mechanism. Instead, a more important source of regulation for Great Lakes nonboundary diversions has been the *US Water Resources Development Act*, an act of Congress passed in 1986 that gives each of the Great Lakes states a legally enforceable veto on any non-boundary diversion that would transfer water out of the basin. While these veto powers have blocked one diversion proposal, forced the scaling back of two other proposals, and probably deterred others, the effect of the Great Lakes Charter was negligible over the same time period. Although the *Water Resources Development Act*, which was ushered through Congress by representatives from the Great Lakes states, reflects the common interest that border states and Canadians have in preserving their shared waters, it is also

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discomfiting to realize that this element of Canadian water conservation resides almost exclusively in American federal legislation.

A second limitation of the BWT is its lack of authority over diversions that were constructed prior to its creation in 1909. When the BWT was negotiated, it was agreed that it would apply only to new diversions, having no authority over the existing diversions that were already constructed at that time. This means that the amount of water transferred through those

diversions constructed prior to 1909 could be increased on a unilateral basis, outside the bounds of the BWT and without the approval of the IJC.

The prime example of this is the Chicago diversion, which, as noted above, is currently running below capacity. Since 1967, the rate of water transfer in the Chicago diversion has been set by the US Supreme Court through a consent decree in which Canadians and Canadian interests are largely incidental to those of the US. Once again, the possibility of the diversion of the waters of the Great Lakes is in the hands of a US institution, and it is certainly not inconceivable that US interests may tilt in the direction of increasing water transfers through the Chicago diversion.

The demand for increased flow through Chicago could be driven by decisions related to dam management on the Missouri River and/or by increased consumptive use or interbasin diversions of Missouri River water. Both the Missouri River and the Chicago diversion flow into the Mississippi River, a vitally important river for US commerce. Should water levels fall on the Missouri, this could result in calls for increased diversions from the Great

Lakes to augment flow, through the Chicago diversion, to compensate for these reductions and maintain Mississippi water levels — particularly for navigation. Already, there seems to have been movement in this direction.

In 2001, the US Army Corps of Engineers (USACE) proposed revisions to their management of the Missouri River. Implementation of USACE's revisions threatens to reduce flows and shorten the navigation season on the Mississippi River. Water

releases providing a channel nine feet in depth are necessary to support full-service navigation on the Mississippi. In 2006, Missouri's Governor pointed to the need for USACE to ensure that an effective navigation system be maintained on the Mississippi River. Mississippi River stakeholders have estimated they would suffer annual economic losses from the revisions anywhere from \$7.5 to \$30 million.

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accounted for with the general goal of maintaining a long-term average annual diversion of 3,200 cfs from Lake Michigan. Severe drought in 1988 caused the Illinois and Mississippi Rivers to fall to record lows, causing navigational problems in the Mississippi River as well as troubles for farmers. This situation led to calls by the state of Illinois and several US senators for the USACE to triple the flow of the Chicago diversion for one 100 days and possibly longer. This proposal raised considerable public alarm in the Great Lakes basin, but the flow limits were not ultimately changed. It is altogether conceivable

for a proposal to increase flows through the Chicago diversion since the article does not apply to "cases already existing" at the time of the creation of the Treaty.

The possibility of bulk water exports and large-scale diversions of water continues to be of interest in Canada and in the other Great Lakes states in the US. The possibility of bulk water exports does not seem to be economically viable and hence bulk water exports do not seem to be a threat. However, large-scale water diversions are another matter. It is for this reason that a recent agreement between

all parties bordering on the Great Lakes was signed to strengthen the Great Lakes Charter. However, even in this agreement, the State of Illinois is allowed an exception in that it can rely on a US Supreme Court decree that set the current maximum allowable diversion of water from the Great Lakes through Chicago. But as Lake Michigan lies entirely in the

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In the past, droughts in the Mississippi basin have led to calls for increased diversions three times: in the 1930s, 1950s and 1980s. When a major drought from 1952 to 1956 resulted in low flows on the Mississippi River, the US Supreme Court in 1956 granted a permit to increase the flow through the Chicago diversion to 8500 cfs for 76 days. In 1967, the Supreme Court limited the diversion to 7,600 mld (3,107 cfs). Subsequently in 1980, the Court modified the 1967 decree by changing how the diversion would be

that once again there could be sharp pressure to increase the allowed limit of the Chicago diversion, with risks for Great Lakes communities and the basin's ecosystem.

If that occurred, it is doubtful if there are adequate institutional mechanisms to protect the Canadian interests in the Great Lakes, since Lake Michigan is entirely within the United States. That is, the lake is not a boundary water, but flows into boundary waters. Article III of the 1909 Treaty, which requires IJC approval for diversions or obstructions that affect the natural level or flow of boundary waters, would not be available. Article II of the Treaty does apply to diversions of waters that would normally flow into boundary waters. Notably however, this article does not trigger a requirement for IJC approval, but rather only provides the injured party access to the courts of the country where the diversion occurs. Moreover, it is not clear to what extent article II could be used internationally

US, it is possible that future diversions could occur from there without the need for Canadian input although Canada could take the matter to the US courts.

While all parties around the Great Lakes endorse the principles of watershed management and in-basin use, climate change or other emergencies could tempt the southern water-stressed states from seek water from the Great Lakes through the Chicago diversion by having the US Supreme Court vary the decree. In such circumstances the best that Canada can do is to work through the other Great Lakes states who are also likely to object to the diversion and have authority, under the *Water Resources Development Act*, to raise a legal challenge.

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