NRT

NATIONAL ROUND TABLE ON THE ENVIRONMENT AND THE ECONOMY

CHARTING A COURSE

EXECUTIVE SUMMARY

SUSTAINABLE WATER USE BY CANADA'S NATURAL RESOURCE SECTORS

Canada

Sustainable development of our natural resources requires sustainable water use.

LETTER FROM THE VICE-CHAIR

The NRTEE believes that the opportunity is now to put Canada on a policy path to ensure sustainability of our water and natural resource sectors. *Charting a Course*, the second report by the NRTEE examining the future of Canada's water supply, is an important contribution to meeting Canada's objectives of improved water use efficiency and water conservation.

Past assumptions of water governance and management may no longer be applicable in the face of anticipated pressures on water resources. In a world of increasing competition for access to water, new pressures such as climate change are emerging that could put the long-term sustainability of our water resources at risk.

This new report shows that Canada can address some of these water challenges while maintaining a prosperous natural resources sector, by proposing several potential avenues of solutions: improved understanding of water-demand forecasts, new policy tools, information and data improvements, and more effective collaborative governance approaches.

The NRTEE recognizes ongoing efforts across the country to modernize and improve existing water policies and legislation, and hopes that the insights, conclusions and recommendations included in this report will help steer Canada on a policy path to ensure a prosperous economy through the development of our natural resource sectors while ensuring the protection and health of our ecosystems.

R.W. SLATER, CM, PH.D.
NRTEE Vice-Chair

MESSAGE FROM THE PRESIDENT AND CEO

Fewer issues bring the environment and the economy together more than water and industry. Canada's natural resources sectors are the largest water users in our country. How they use, conserve, and manage water has a real impact on ensuring sustainable water use across Canada.

In the past two years, the NRTEE has released two reports on sustainable water use by Canada's natural resources sectors. Having identified the issues in *Changing Currents*, we now outline new ways forward to value, manage, and sustain water use for industry and ecosystems in *Charting a Course*.

We set out key principles to govern sustainable water use by the natural resources sectors. We show how water conservation and efficiency can be generated through pricing and other measures. We highlight new collaborative ways to govern water use by all interests in a watershed. And we show the importance of good information and data so governments can make solid water allocation and management decisions for the future.

Charting a Course demonstrates the long-term importance of getting water sustainability right. It says all players, industry, governments, communities, have a stake and a role in both charting that course and following it through.

DAVID McLAUGHLIN
NRTEE President and CEO

EXECUTIVE SUMMARY

Improved water-use management starts with strong principles that value water so it can be conserved and used efficiently. Sustainable water use will come from better knowledge and application of four key knowledge areas: water forecasts, water quantity data and information, policy instruments, and collaborative water governance.

EXECUTIVE SUMMARY

Water, the defining component of ecosystems across Canada, is integral to the development and prosperity of Canada's natural resource sectors.[1] Water drives the natural resource sectors' development and operations. The natural resource sectors are, and will continue to be, the most significant water users in Canada. The sustainable development of our natural resources requires careful and informed consideration of what development may mean for our water resources. It is critical that in setting the right conditions to ensure prosperous economies through development of our natural resources, we also ensure the protection and health of our aquatic ecosystems.

To understand how Canada can ensure sustainable water use by the natural resource sectors, the National Round Table on the Environment and the Economy (NRTEE) set out to explore four areas related to quantitative water use by the natural resource sectors:

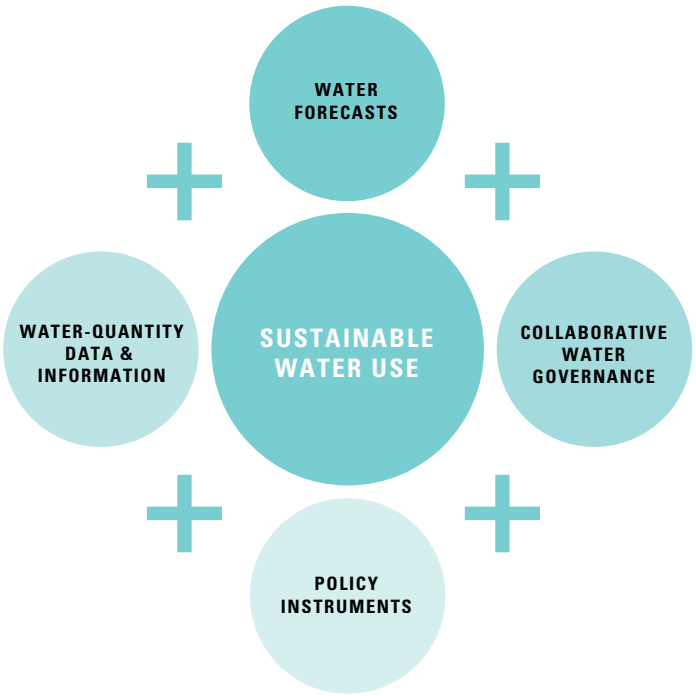
- **Water use by the natural resource sectors**: how each of the resource sectors uses water, and to what degree water use might increase in the future with rising production (water forecasts);

- **Emerging policy instruments for water management**: the potential of two emerging policy instruments — water pricing and voluntary initiatives — to improve water conservation and efficiency;

- **Water-quantity data, information, and knowledge**: how we can improve our data and information base for quantitative water use by the sectors; and

- **Collaborative water governance**: the potential use of more collaborative governance approaches to improve water allocation and management decisions.

FOUR KNOWLEDGE AREAS



Improving our understanding of these four knowledge areas will significantly contribute to an improved system of water governance and management, moving us in the direction of sustainable water use by the natural resource sectors.

The NRTEE's advice is intended to inform governments as they develop water strategies, as well as industrial and agricultural sectors in their practices and management plans. Achieving sustainable water use depends upon getting strategies and policies right. Water strategies must include the goals of water conservation and water efficiency. Together they will ensure ecosystem protection, allow jurisdictions to be better prepared in times of water shortage, provide a safety margin that may help avert water shortages, and promote best management practices to address an uncertain water future.

THE CONTEXT

The natural resource sectors use and consume more water than any other sectors in the nation, accounting for approximately 86% of Canada's water use in 2005. According to economic forecasts, the sectors are expected to experience significant growth, ranging from 23% to 58%, by 2030. Added to other stresses, like climate change and a resultant increase in the frequency of extreme weather events, the NRTEE concluded in our first report, *Changing Currents: Water Sustainability and the Future of Canada's Natural Resource Sectors,* that the long-term sustainability of our water resources may be in question. And more specifically that our governance and management structures may be not be well positioned to deal with an uncertain water future, especially with respect to water quantities in this country.

FINDINGS

Our research shows that we can address some of the water challenges associated with a prosperous resource sector by taking steps to

- better understand the future growth of the natural resource sectors and their water requirements;
- recognize the value of water, both in terms of how much it currently costs the sectors and where water pricing may be an incentive for further water efficiency and conservation;
- ensure that water strategies and policies include a suite of new policy instruments that are readily available for implementation, including water pricing and voluntary initiative options;
- develop comprehensive water data and information systems, taking stock of both water supplies and water demands, particularly in the most vulnerable watersheds in the country; and
- promote further collaborative water governance in appropriate circumstances, such as in the need for water strategy development.

CONCLUSIONS

Focusing on our four key knowledge areas, the NRTEE research led us to these conclusions.

WATER FORECASTS

Historical water use by the natural resource sectors shows improved water-use efficiency for most sectors, even in the absence of water policies to motivate such efficiency gains. These improvements may be due to the link between water use and energy, as rising energy costs cause firms to find ways to reduce their energy use, resulting perhaps in water intake reductions.

Based on past improvements demonstrated by the sectors, our research anticipates that water-use intensity will continue to decrease or at least hold steady through to 2030 for many of the natural resource sectors. Even when coupled with an expected increase in economic activity for these sectors, these historical trends of water-use intensity result in small overall increases in water use in Canada in the future.

Even though our scenario analysis reveals a potentially small overall increase in water intake on a national basis, the result masks some regional challenges. Nowhere is this more apparent than in areas with regional concentrations in oil and gas and agriculture. Further analysis on a regional and sectoral basis is required to improve our understanding of where water demands are likely to increase substantially with economic growth.

POLICY INSTRUMENTS

Economic instruments (EIs) and voluntary initiatives have real potential for contributing to the goals of improving water conservation and water efficiency.

Adopting new EIs — such as water charges or tradable water permits — would allow Canada to meet these objectives by transitioning current regulatory approaches to more efficient mechanisms. EIs provide incentives and flexibility for water users by allowing them to determine their water use and adopt water-conserving technologies. A water charge seems the most likely option of the two, at least in the shorter term, and can be viewed as a *transitional* policy option. In contrast, trading of water permits within a watershed represents a fundamental shift in water-management systems and can be seen as a *transformative* option.

Voluntary initiatives, taken on by industries in the absence of government intervention, are likely to continue their role in improving water management across many sectors. While the effectiveness of such initiatives is still in question, past experience shows promise for these approaches as they relate to measuring and reporting water use and improving transparency of industrial water management. Together, they help support industry's "social licence" to operate.

Our research shows that pricing water on a volumetric basis can help achieve water reduction objectives, with modest impacts to most sectors and the national economy. An important piece of new information, the NRTEE's original scenario analysis looks at the relationship between water demands from the natural resource sectors and industry's responsiveness to a price on water. Our analysis demonstrates that some sectors may be responsive to water pricing, and large efficiency and conservation gains could be achieved with small increases in the price of water.

WATER-USE DATA AND INFORMATION

A lack of reliable, publicly available data on water quantity has negative implications for current and future water resource management in Canada. Specifically, the lack of baseline water-use measurements hampers efforts to improve efficiency since the potential to improve can be difficult to estimate, actual improvements cannot be assessed, and incentives for reductions cannot be readily developed, implemented, or evaluated.

For the supply side of water in Canada, data about water quantity, monitoring capacity, and reporting protocols are well established. The different stakeholders have established a clear understanding of their respective roles. Although some gaps remain in the water supply-side data system, a strong foundation exists upon which to build.

Data systems for the demand-side of water quantity are at the opposite end of the spectrum of development and deployment, as they vary considerably across provincial and territorial jurisdictions. In collaboration with the natural resource sectors, governments at all levels must address significant gaps before they establish measuring, monitoring, and reporting protocols for demand-side data that are consistent across the country.

In Canada, governments at all levels lack the capacity to integrate supply-side and demand-side water-quantity data to evaluate, predict, and forecast future water availability at a watershed scale. Governments need to develop the capacity to generate integrated water-management tools that provide information at a watershed scale on a priority basis.

COLLABORATIVE WATER GOVERNANCE

Effective collaborative water governance requires the involvement of a broad range of stakeholders. To stay engaged and committed, stakeholders need incentives and solid, attainable outcomes. There is a strong desire to see alignment with other planning processes such as municipal land-use planning or forest management plans. To encourage participation in collaborative water governance, governments need to demonstrate strong leadership and act on the recommendations provided by the collaborative process.

Collaborative water governance is a tool to be selected in particular situations, not a panacea for all water governance challenges. It requires time and dedicated resources, as well as clear rules and guidance from governments. To be successful, the mandate, scope, and role of collaborative groups must be clearly stated in written documents. Successful collaborative governance requires clear objectives and accountability rules, and stakeholder or government support. Provincial and territorial governments need to be clear about the mandate, scope, and role of collaborative groups' activities as well as the role and importance of Aboriginal communities and the natural resource sectors in collaborative water governance initiatives. Furthermore, we note the need to move toward integrating land and water management in addressing many watershed challenges.

RECOMMENDATIONS

PRINCIPLES FOR WATER GOVERNANCE AND MANAGEMENT

The NRTEE recommends that federal, provincial, and territorial governments developing new water strategies should adopt the following core principles in our report:

- Water has value — in economic, environmental, and social terms — and should be managed in trust without harm to its sustainability or that of the ecosystems in which it occurs.
- Water must be conserved and used efficiently.
- Water governance and management should be adaptive.
- Water governance and management should be collaborative.

WATER FORECASTS

- The federal, provincial and territorial governments should collaborate in the development and publication of a national water-use forecast, updated on a regular basis – a Water Outlook – the first to be published within two years. This could be led by a national organization such as the Canadian Council for Ministers of the Environment.

- Governments should develop new predictive tools such as water forecasting to improve their understanding of where and when water demands might increase. The information provided by forecasts will be important to inform water allocations and management strategies in the future.

- Recognizing that accurate water forecasting requires improving how we measure and report water-quantity data, governments and industry should work collaboratively to develop appropriate measurement and reporting requirements on a sector-by-sector basis.

POLICY INSTRUMENTS

- Recognizing that water policy strategies across Canada need to be flexible and responsive to changing water realities (changing hydrological conditions and increased water demands on regional and watershed bases) to avoid potential water conflicts, governments should take a phased approach to policy change: (1) ensure that enabling conditions such as legislation and regulation are in place, and (2) stage policy options, thereby allowing for adaptation to different circumstances.

- Provincial and territorial governments should provide policy direction that is focused on more efficient water use and increased conservation, where required.

- Recognizing that further research is required on the use of economic instruments within the context of watersheds, governments intending to use EIs should evaluate their environmental, economic, and social implications, allowing for an informed discussion of trade-offs.

With respect to putting a price on water intake by the natural resource sectors:

- Governments should research the relationship between water use and pricing needs before they implement water pricing on a volumetric basis. Specifically, they need to better understand the potential implications on sectors and firms. In order to do so, data on water use needs to improve, to gain a better understanding of water intakes, recirculation, and recycling within facilities.

- The natural resource sectors should look closely at their water intake and where the costs rest within their use of water. Incorporating the "value" of water into operations may reveal opportunities for costs savings, through implementation of improved technologies or best management practices, possibly leading to overall water intake reductions.

- If a price is put on water use by the natural resource sectors, revenues should be directed to support watershed-based governance and management initiatives, rather than put into general revenue of the province or territory.

WATER-USE DATA AND INFORMATION

- Provincial and territorial governments should establish demand-side data systems that have clearly defined reporting requirements for water licence holders. These systems would have common obligations to report provisions, contain defined time periods for reporting, and introduce enforcement programs to ensure reporting of water use by water licence holders.

- The provinces and territories, in collaboration with stakeholders and partners, should develop common measurement techniques to collect water-quantity data.

- The provincial and territorial governments, in collaboration with the natural resource sectors, should research the sector-specific future water data needs of their jurisdictions. These initiatives would help jurisdictions identify and develop data-management approaches and systems that have buy-in from the natural resource sectors.

- Governments at all levels should collaborate with partners and stakeholders to develop and integrate water-quantity data for use as a water-management tool at a local watershed scale. Provinces and territories should first develop integrated water-management tools

within their jurisdictions at a finer spatial resolution, as it is easier to "roll-up" small-scale assessments to larger scales rather than to disaggregate an initial assessment performed at a larger spatial scale.

- In collaboration with partners and stakeholders, governments at all levels should develop protocols for transparent access to water data. Provinces and territories should continue establishing their own water-data portals. The federal government should develop a national web-based water portal, in collaboration with the provinces and territories, which also provides access to provincial and territorial water portals.

COLLABORATIVE WATER GOVERNANCE

- Governments should affirm the legitimacy of collaborative water governance and demonstrate that collaborative governance bodies have an important role to play. If governments choose to invest in collaborative processes, they must act on the recommendations provided by the collaborative process as much as possible and commit to provide formal feedback to the group when recommendations are ignored. Otherwise, participants from the natural resource sectors will lose confidence and leave the process, given the significant time and financial commitment for them.

- Governments must recognize that collaborative water governance structures require clear roles and responsibilities and well-defined accountability rules. Most people and organizations involved in collaborative water governance across Canada, including the natural resource sectors, believe that there is insufficient clarity about authority and accountability for decision making within the current frameworks. As a minimum, the Terms of Reference for the collaborative processes require a written description of roles and responsibilities. A more formal document would strengthen the accountability, and in some cases, governments may want to enshrine the governance structure into a new piece of legislation.

- Collaborative water governance processes should be developed and implemented in a coordinated manner with other planning processes and policies. Water governance is not only about water and cannot take place in isolation from other planning processes affecting and involving the natural resource sectors, such as municipal land use planning or forest management plans. As these processes operate at various scales and involve several orders of governments, policy alignment will require coordination between a number of governmental and non-governmental organizations.

- Governments should provide incentives for participation. Effective collaborative water governance requires the involvement of a broad range of stakeholders, including the major water users in the natural resources sectors. For collaborative water governance processes to become operating concerns in the natural resources sectors (rather than optional activities), government must identify them as a priority. This could be done by making participation mandatory, through regulation or as a condition of water licences.