Wave *of the* Future

WATER POLICY IN WESTERN CANADA

A Synthesis Report of the Spring 2011 Honourable James A. Richardson Discovery Roundtables

AUGUST 2011

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The Honourable
James A. Richardson
DISCOVERY ROUNDTABLES

CanadaWest FOUNDATION 10 years

Project Description

Among the many civic contributions made by the Honourable James A. Richardson during his lifetime was his role as one of the four founders of the Canada West Foundation. In fact, it was a suggestion by Minister Richardson at the One Prairie Province Conference in 1970 that led to the creation of the Canada West Foundation as a registered charity on December 31, 1970.

Launched in 2006 with the intention of being held on an annual basis, the purpose of the *Honourable James A. Richardson Discovery Roundtables* is to seek out new thinking to strengthen the voice of western Canadians. Informal but intense, the discussions are designed to engage a small group of individuals with a background in, and a passion for, the topic under discussion. The intent of the *Roundtables* is to look over the horizon and gain a sense of the policy challenges to come, and how the Canada West Foundation's research agenda might be better positioned to address those challenges.

The *Honourable James A. Richardson Discovery Roundtables* are made possible by the Richardson family's contribution to the Canada West Foundation Founder's Endowment Fund. The Canada West Foundation expresses its sincere appreciation for this generous support.

The Honourable
James A. Richardson
DISCOVERY ROUNDTABLES

This report is part of the Canada West Foundation's ongoing *Honourable James A. Richardson Discovery Roundtables*. The report was prepared by Canada West Foundation President and CEO, Dr. Roger Gibbins and Larissa Sommerfeld, Canada West Foundation Policy Analyst. The views expressed in this document are not necessarily held, in full or in part, by the *Roundtable* participants. Any errors or omissions remain the responsibility of the authors. The opinions expressed in this document are those of the authors only and are not necessarily those of Canada West Foundation's Board of Directors, advisors or funders. The report can be downloaded from the Canada West Foundation's website (*www.cwf.ca*).

The author's express their sincere thanks to all the *Roundtable* participants for volunteering their time and insight.

ISBN 978-1-897423-87-5

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Water has the potential to be the defining issue for western Canada in the coming years. As decision-makers around the globe talk about increasing food and energy prices, a growing world population and the potential effects of climate change, the topic of water and how it is managed is becoming more important than ever before. But, what does this global conversation mean for western Canada?

In the spring of 2011, over 50 individuals involved in water management, governance or the study of water were brought together by the Canada West Foundation under the auspices of the *Honourable James A. Richardson Discovery Roundtables* to talk about western Canada's current water challenges and priorities for the future. There are a variety of water issues in western Canada, all of which are relevant to the economy, local cultures, and ecosystem and human health—yet governments have fixed capacity and resources to address these challenges. Participants were keen to offer their ideas on the priorities policymakers should have and how they can prepare for the future.

Upon completion of *Roundtables* in Victoria, Lethbridge, Saskatoon and Winnipeg, it was clear that there were more similarities than differences among the views of water policy experts across the West. This outcome indicates that there is, overall, a western Canadian outlook when it comes to water policy, and also a similar sense of priorities. The key highlights that were similar across the four provinces were:

- planning for the unknown is necessary: climate change is a game-changer that can affect both water quantity and quality, and governments must take a long-term approach to planning water policy;
- data shortages, the polarized state of the water conversation, unclear terminology and a weak interface between research and policy create "muddy waters" that hamstring progress in this area;
- governance must be improved by reducing jurisdictional fragmentation and via effective transboundary management;
- there is a need to place value on aquatic natural capital—western Canada's rivers, lakes and wetlands;
- improvements are needed in management that addresses the trade-offs between environmental and economic decisions, quantity and quality challenges, and local watershed management; and
- changing societal attitudes and increasing public awareness of water issues are vital.

Although some themes were more prominent in some provinces, by and large the differences between the provinces lay not in overarching issues such as governance and concern for the future, but in local challenges based on climatic and geographical variations. The two most prominent differences were in Manitoba, where a great deal of discussion centered on Lake Winnipeg, and in Alberta, where participants focused on additional topics that did not receive much attention at other *Roundtables*.

At all *Roundtables* there was a sense of optimism about the future, despite the enormous challenges that lie ahead. There was acceptance that change and uncertainty are facts of life, and the best course of action is to stop speculating and worrying about change. Attitudes toward uncertainty should not be fearful, but rather anticipatory of change and the opportunities associated with it. In the words of one participant, we should "talk about the opportunity, talk about how great it will be if you get it right. Talk about how beautiful it will be, how prosperous it will be…." Moving forward, decision-makers should not feel overwhelmed, but should realize that addressing even one of the priorities highlighted above will be a step in the right direction.

Preface

The theme of the spring 2011 *Honourable James A. Richardson Discovery Roundtables* was "Water: Wave of the Future," which reflected not only the interests of the Richardson family, but also research underway at the Canada West Foundation on water markets, water pricing and the interface between economic development and water management in western Canada.

Roundtables were held in Victoria, Lethbridge, Saskatoon, and Winnipeg between March and May 2011 (see the Appendix for a list of attendees). Participants were asked to consider the following questions:

1. What are the emerging water policy issues and priorities in your province?
2. What water challenges will be key to western Canada's place in the country and its long-term economic prosperity over the next 5-10 years?
3. What are the three most important public policy actions that must be taken by the local, provincial or federal government to address water challenges in your province?
4. How can today's research agenda be better positioned to address water challenges?

These questions guided vibrant discussions on water policy in western Canada and helped draw out the highlights that are presented in this report. The quotations used to animate this report were taken from participants from all four discussions.

Despite our best intentions to impose a simplified structure on a complicated policy issue, conversation among participants moved back and forth between the four questions, and many points raised applied to one or more questions. Additionally, the conversations often moved quickly from water policy issues, priorities and challenges to solutions. Water policy is a vast topic and an area where there are myriad challenges, yet governments have fixed capacity and resources to address these challenges. Participants were keen to offer their ideas on the priorities policymakers should have and how they can prepare for the future.

In building the list of *Roundtable* participants, we sought to bring together experts from a variety of perspectives, including government, industry, academia and non-governmental organizations in order to ensure the discussions were as representative of different views as possible. The Canada West Foundation identified key individuals in each host city who served as *Roundtable* co-hosts and worked collaboratively with the Foundation to organize and moderate the discussions. The Canada West Foundation thanks the following co-hosts for their assistance and input: Oliver Brandes and Dr. Michael M'Gonigle in Victoria, British Columbia; Dr. Henning Bjornlund in Lethbridge, Alberta; Dr. Howard Wheater, in Saskatoon, Saskatchewan, and Dr. Rhonda McDougal in Winnipeg, Manitoba.

Introduction

Water has the potential to be the defining issue for western Canada in the coming years. As decision-makers around the globe talk about increasing food and energy prices, a growing world population and the potential effects of climate change, the topic of water and how it is managed is becoming more important than ever before. But, what does this global conversation mean for western Canada?

In the spring of 2011, over 50 individuals involved in water management, governance or the study of water were brought together to talk about western Canada's current water challenges and priorities for the future. The Canada West Foundation hosted these discussions under the auspices of the *Honourable James A. Richardson Discovery Roundtables*. Held across the West, the *Roundtable*s were convened to determine whether regional patterns or similarities co-exist in western Canada alongside strong provincial differences in terms of water policy.

There are a variety of water issues in western Canada, all of which are relevant to the economy, local cultures, and ecosystem and human health. In British Columbia, the potential for both floods and droughts is a concern. In southern Alberta, water scarcity and a possible water exchange are catching people's interest. Water quality issues are prevalent wherever there is natural resource development and agricultural activity. Challenges with water quality are perhaps most magnified in Manitoba, where the continued eutrophication of Lake Winnipeg affects not only ecosystem health, but also human health and the local economy. Across the West, water quality on reserves and in rural areas is worrisome. Water challenges are real, and are here to stay. Policymakers must continue their work on addressing these matters—for current and future generations—before they come to a head. And so, the *Richardson Roundtables* were deployed to identify the top priorities into which policymakers should invest their time and resources.

This summary report describes where there are similarities among the four provinces, as well as highlights the differences that arose during the *Roundtable* discussions. The depth and breadth of the topics discussed demonstrate just how complicated water policy is—and how much work there still is to be done. And although the consultations were only held in western Canadian cities, the findings and recommendations derived from them are applicable on a nation–wide scale and are likely to be of interest to individuals living outside the West. It is hoped that the rich source of ideas presented here will help advance the water policy discussion in Canada.

Highlights from Across the West

Upon completion of all four *Roundtables*, it was clear that there were more similarities than differences among the views of water policy experts across the West. This outcome indicates that there is, overall, a western Canadian outlook when it comes to water policy, and also a similar sense of priorities. The key highlights that were similar across all four provinces were:

- planning for the unknown is necessary;
- data shortages, the polarized state of the water conversation, unclear terminology and a weak interface between research and policy create "muddy waters" that hamstring progress in this area;
- governance must be improved by reducing jurisdictional fragmentation and via effective transboundary management;
- there is a need to place value on aquatic natural capital;
- improvements are needed in management that addresses the trade-offs between environmental and economic decisions, quantity and quality challenges and local watershed management; and
- changing societal attitudes and increasing public awareness are vital.

The discussion during the *Roundtables* was rich, and in some cases, participants had clear-cut and specific ideas on the kind of actions government should take. Other ideas were more abstract. In these cases, exact policy actions were not suggested, but nevertheless, the ideas that follow provide good launching pads for further discussions about policy priorities. Although some themes were more prominent in some provinces, by and large the differences between the provinces lay not in overarching issues such as governance and concern for the future, but in local challenges based on climatic and geographical variations.

Planning for the Unknown

"One of the challenges is that with climate change, our traditional analyses are changing…There is no such thing as a 'one hundred year flood' anymore."

Climate change, all participants agreed, is a game-changer that can affect both water quantity and quality, and governments must take a long-term approach to planning water policy. But the way that climate change is and will be a game changer is mostly unknown, and therein lies the rub. With climate change, the intensity and frequency of floods and droughts is expected to increase, but no one knows how fast or where or when this might occur. Climate change might mean more water for some, and less for others. It likely will mean increasingly unpredictable weather. Along with a growing world population and rising demand for food, energy and water, policymakers also have to take the uncertainties associated with climate change and hydrological cycles into their long-term planning. This will be difficult, as current hydrology patterns are no longer as reliable in predicting the future as they used to be.

"We don't have enough conversations about opportunities that may emerge due to limitations we are faced with in our region, or the competitive advantages that can emerge if we properly define them."

There was recognition that uncertainty will almost always be a factor going forward, and that the way to address an uncertain future is to ensure that tools are in place that can help manage unpredictable situations. As one expert said, "I don't think you can provide certainty because we live in an uncertain world. But what we can definitely do is educate and provide instruments—such as water trading—that help us manage the risk, so that we know what to do when we have a problem."

Planning for the unknown must take into account other factors. Preparedness must be holistic: water is related to food and energy production, the environment and human health. As one expert said, "if the prevalence of drought increases, it will be a challenge to economic productivity." Water policy cannot be created in isolation. This was touched upon most in the Alberta discussion. One participant noted that communities in southern Alberta are "afraid they won't get business here" because of perceptions around unstable water supply.

Several participants voiced concern about the state of preparedness for an emergency situation in their province—most notably in British Columbia and Saskatchewan. These experts felt that not enough government support was in place for risk management, and that both flood and drought emergency plans are not always prepared, in place and up-to-date in high-risk areas.

Planning for the unknown involves ensuring that Canada's water infrastructure is able to weather a storm. Canada's water infrastructure deficit may pose a major problem because, for the most part, it cannot currently cope with additional strains and pressures. It may take years to repair and update infrastructure, so it is imperative to address this issue now.

Overall, across all four discussions, experts were optimistic about the future, despite the unknown. There was an acceptance that change and uncertainty are facts of life, and the best course of action is to stop speculating and worrying about change. Attitudes toward uncertainty should not be fearful, but rather anticipatory of change and the opportunities associated with it.

Muddy Waters

Although not a central focus of the *Roundtable* discussions, participants would often return back to the concept of "muddy waters." They vociferously expressed the need to gather better data on water, improve the state of the water conversation, clarify unclear terminology and strengthen the link between research and policy.

i) Data and Research Shortage

A lack of data and research can paralyze even the best policy intentions. Data and research are foundations of strong policy, and experts repeatedly referred to the need to improve data collection and water research efforts and funding.

The "wish list" of priority areas for further research included:

- building an inventory of surface and groundwater supplies;
- understanding political and public barriers to adoption of financial mechanisms for water management;
- understanding the impact of scientific and social research;
- improved understanding of relationships between levels of government;
- using social science data, possibly using modeling, to project the impact of implementing water charges, barriers to adoption, willingness to pay and the best ways to influence public behaviour; and
- securing data on water usage, consumption and returns through water metering.

"We don't know what's possible because we're actually afraid of engaging in conversations that might hold us up to ridicule."

Not only is additional research needed, but so too are vehicles that allow for data to be coordinated either on a regional or national scale. Some participants suggested that independent, arms-length reporting entities responsible for coordinating and conducting research be set up on a provincial scale. This suggestion echoes the 2011 recommendation of the Alberta Premier's Council for Economic Strategy, which proposed the Alberta government set up the Alberta Water Authority, which "will be charged with creating and maintaining a fully integrated and accessible water information system to support planning and decision-making" (Premier's Council for Economic Strategy 2011).

ii) State of the Water Conversation

"Because water is personal, emotional, political, financial, we don't do a good job of talking about it. It's something that's very easy to get polarized about immediately."

The water policy community forms the base for knowledge, research and expertise on water issues in Canada. Yet experts lamented that within the water policy community itself the state of the water conversation is oftentimes polarized and heated.

Having a conversation about water is difficult because water can mean very different things to different people. Finding the language that helps overcome entrenched positions and facilitate partnership can be challenging. Experts felt that it can be difficult to address all valid and sometimes opposing viewpoints of water stakeholders without rhetoric becoming polemic and stalling progress. Improving the tone of the water conversation is essential for success. As one participant noted, "the moment the discussion becomes polarized, people shut off." Experts want myths to be dispelled within the water community, to stop the mentality of "us versus them." This concern was most prominent in Alberta, where it was noted that stakeholders have a tendency to get siloed, and soon enough, it is the environmental advocates versus the irrigators, the oil companies versus conservation societies. Experts pointed out that individuals can be both environmental advocates and irrigators, for example, and that "there's a lot of running assumptions that are not shared assumptions [within the community]." Participants expressed a desire for greater research networks and policy frameworks that allow sectors and stakeholders to share information and ideas.

"We don't have the kind of policy frameworks today that really encourage experimentation, that create a space to learn by doing. And I think that's one of the things that we critically need."

iii) Unclear Terminology

Decision-makers must have a shared understanding of common water terminology. The terms that are often most confused are "use" and "consumption." Water that is used is returned to its source, but water that is consumed is not. Managing water on the basis of use is not effective. Rather, it was suggested, water should be managed on the basis of consumption. Some respondents also felt that the fate of water is not adequately addressed in the way water is currently allocated. Will water be polluted? How much will it cost to clean this polluted water? One expert felt that water licenses in particular should also include considerations of the fate of water. By clarifying common terminology, it is possible that "we'd end up with a lot of efficiencies and opportunities." Another important difference to note is the water that is allocated to a user versus the water that is actually used. In most cases, the total water used is less than the amount that is originally allocated. By constantly referring to allocations rather than use, some water challenges may appear out of proportion. Ensuring that commonly defined terms are used in the same ways in both water research and management is a relatively simple task to carry out, and one that could result in enormous benefits—not only to those involved in water policy, but also for engaging the public in water conversations.

iv) Interface Between Research and Policy

There was a focus on the interface between research and policy—one of the topics that dominated the discussion in Saskatchewan. Improving the uptake of scientific and social research into policy was identified as a challenge that will be key to western Canada's place in the country and its economic prosperity over the next 5-10 years. There are two areas where disconnects lie. First, there is a disconnect between university research agendas—which are designed to push the frontiers of science—and the policy world, in which leaders must solve practical problems in short time frames.

Second, there is disconnect between the policy community themselves—the experts—and decision-makers. Experts highlighted the need to bring comprehensive yet concise information to the decision-makers. As one individual with a background in politics noted, for decision-makers, "major, major decisions are coming in front of us and we have about five minutes to make a decision." Decision-makers, unfortunately, often do not have the time to ruminate about the details of each and every issue that comes across their desks. Due to time constraints, it is imperative that research be clear and easy to understand. It must be simple and direct. The way to do this is to get more "experts" involved in the decision-making process—not as the person calling the shots, but rather as a valuable resource who can provide advice, input and guidance on key public policy issues within their area of expertise. Additionally, decision-makers must have access to improved decision-making tools. They must make very difficult decisions in short time frames that involve trade-offs. If they can be equipped with better tools, our experts said, their decisions will be easier to make and will be better informed. The details, however, of these "tools" were left vague.

WHAT WASN'T TALKED ABOUT

The highlights outlined in this report are an outcome of the various opinions and experiences of the *Roundtable* participants. A different group of participants may have yielded completely different results. With that caveat in mind, it is worth noting that there was little discussion of the following topics:

- → Bulk water exports and/or implications of NAFTA
- → Private sector involvement in water services
- → Conservation practices
- → The water-energy nexus
- → Water as a human right
- → Municipal water issues

Issues that were touched upon briefly but not discussed in detail included:

- → A national water strategy
- → Water challenges affecting Canada's Aboriginal population

What wasn't talked about was almost as interesting as what was talked about. Often the issues that dominate media coverage of water include, for example, bulk water exports and water as a human right. These did not appear to be priority issues for the participants. This is not to say that these points are not important, as they no doubt are, just simply that they were not touched upon at any of the four *Roundtable* discussions.

Governance

"[The federal government] has to become active in those areas where it's appropriate for it to be active."

In all four provinces, there was a strong desire for governments to elevate water on their policy agendas. Water policy must be elevated because it is an essential component of all other major issues. In the words of one participant, "water is the hub of the wheel, with spokes going out to policies on energy, food, biodiversity, municipal infrastructure…" Government must spearhead conversations on water.

"Even though we are doing some of the right things, we are nowhere near where we need to be to address some of these challenges. Environmental issues are dwarfed by other areas of public investment. We don't take these problems seriously."

At all *Roundtables*, the role of the federal government was stressed. Experts felt that the federal government has slowly and continuously withdrawn itself from aquatic science and water policy over the last two decades. To change this trend, experts felt that the federal government must continue to take action on water issues affecting Canada's Aboriginal population, as well as those in rural and remote areas. The discussion over Aboriginal water rights must get underway, but experts recognized this would pose a significant challenge because the Aboriginal population often does not speak with a unified voice.

While recognizing that the federal government does not hold jurisdiction over most water issues, experts stressed the desire for greater federal leadership and engagement in water policy. Participants also focused on the importance of the federal government providing additional support for science as well as for integrative mechanisms already in place, such as cross-Canadian research networks for science.

On the provincial level, water frameworks that include guidelines on allocation, pricing, drinking water quality, metering and instream flow needs should be developed. If a province already has such a framework in place, the framework should continue to be enhanced and updated. The focus on governance was perhaps strongest in Saskatchewan where it was pointed out that Manitoba and Alberta have in place admirable water management strategies that other jurisdictions should strive to emulate. However, there was a general sense of optimism that Saskatchewan was on the right track, and optimism about the newly established Water Stewardship Council (created by the Council of the Federation).

i) Jurisdictional Fragmentation

"There is a massive structural issue in the governance [of water]. And it's not just the governance of water, but of the governance of government."

Throughout the discussions, participants constantly reiterated their view that governance structure is one of the biggest policy challenges the water policy community is dealing with right now in Canada. Jurisdictional fragmentation was of great concern among the experts. Not only is there vertical fragmentation (federal, provincial and municipal), but more importantly, horizontal fragmentation. Provinces or regions should collaborate and attempt to work together on water policy. One individual commented that working in isolation just doesn't make sense because "we're all downstream from somebody."

"Decisions are being made in one sector without appropriate conversations happening with the water sector to make sure the water is there, and that risks are duly considered."

However, despite the fact that jurisdictions are not coordinating their management efforts as best they can, experts also were concerned that there are too many players involved in regulating water in Canada. Too many players can make any management complicated. The solution to fragmentation sounds simpler than it is: government departments need to cooperate and work together. In the words of one expert, "It's an incredible frustration. Government represents such a broad range of interests and not all of these interests are mutually compatible. Some of them, in fact, are quite sharp in contrast." Participants emphasized that coordinating management efforts is something that governments and policymakers should continue.

ii) Transboundary Management

"Trans-boundary issues [e.g., the Master Agreement on Apportionment] are going to be absolutely critical—how we as three governments [Alberta, Saskatchewan and Manitoba] deal with this is critical to our economic and political health as a region."

Flowing from concerns on jurisdictional fragmentation were transboundary issues. Across the prairie provinces, respondents talked about the 1969 Master Agreement on Apportionment, governed by the Prairie Provinces Water Board. An outdated agreement, most concurred, could get the provinces into potentially dangerous territory in the future and should be updated. Specifically, instream flow percentages from decades ago should be examined to see if they are still relevant today. The Agreement is generally based on good relations between the three provinces and so far, "a lack of any serious stress has allowed things to work out relatively well."

Those in Manitoba expressed concern about the activities of those upstream and the potential of their actions to affect Lake Winnipeg. There was a lot of emphasis on the three prairie provinces working together and "bringing the West together around the issue of water." The best way to move toward this is to ensure that current agreements are up-to-date and that plans are in place for new situations.

Not as dominant, though still important, was a focus on Canada-US issues. There was a general sense of optimism that relations are fairly good in terms of water management, but that there is always room for improvement. Those in Manitoba expressed concern about the lack of a water allocation agreement with the US, and worried about an uncertain future. Whatever the US decides to send north is what those in Manitoba will receive and this can be a worrisome situation, because "…there are many scenarios which would have us begging for water."

Valuing Natural Capital

"There's a danger here that commodity prices are going to drive farmers to farm from basically fence-to-fence. And for very understandable reasons. If we don't get those natural capital values, if we don't get those ecosystem services values realized and integrated into agricultural decision-making, the vestiges of well-functioning watersheds that buffer us from flood and drought and nutrient loading will disappear."

Experts in all four provinces greatly stressed the importance of identifying and communicating the value of western Canada's aquatic natural capital—wetlands, aquatic ecosystems, rivers and lakes. The key message was that healthy ecosystems mean healthy economies. It is imperative that policymakers do not disconnect economic prosperity from sustainability.

In order to ensure that ecosystems remain healthy, greater attention must be given to determining how much water is required for an aquatic ecosystem to function. Governments must define and get agreement on what constitutes a healthy, functional water source. This is not a simple task though. Each water source is different, so one single definition cannot be used across the board. Once this has been defined, instream flow needs should be incorporated into a pragmatic environmental framework. In addition to putting a value on ecological goods and services, experts emphasized the importance of investing in preservation and protection of natural capital. Wetland loss, for instance, is a major concern; if wetlands can be protected, many problems (e.g., water quality) can be addressed. Governments must be involved in valuing ecological goods and services and should be responsible for reinforcing the key message that "strong environmental protection does not curtail business." In addition, protecting aquatic ecosystems is not only economically beneficial, but it can also help to maintain Aboriginal culture, which is heavily intertwined with the environment.

"I don't think that we can have economic prosperity going forward unless we actually protect our ecosystems."

One way to define the value of natural capital is to use pricing mechanisms. This was not a method supported by all, but most participants in British Columbia, Alberta and Manitoba agreed that some kind of market-mechanisms need to be in place in order to communicate the value of natural capital to both decision-makers and the public. Many experts felt that defining a dollar value of ecological goods and services would be beneficial to decision-makers. Having tangible figures to work with can make the task of understanding policy trade-offs and implications simpler.

"Determining how much water we need for the environment before doling out allocations is a paradigm shifter."

There was a specific focus on changing the way water is currently priced. Of those experts who were in favour of water prices, many acknowledged that this would meet both public and political resistance. However, as one individual said, without pricing, there is little incentive for larger-water users to invest in improving water quality or technologies: "…until I know what I can get out of it and where I can get my return on it, it's the [tragedy] of the commons."

The ultimate challenge, then, that policymakers face is balancing the often competing values of preserving environmental integrity, social justice, and economic growth.

Management and Pricing

i) Management

"We need to stop looking for a silver bullet…Solutions need to be long-term, local, diversified and multi-purpose."

Participants stressed that good management is guided by good governance structures. Overall, there was repeated recognition that water is best managed on a local scale, but within a provincial or regional framework, both of which should be guided by federal standards. In most cases in western Canada, the responsibility of water management has continued to move down to lower and more local levels. This is a positive development, but experts stressed that the resources needed to manage water on a local scale have not followed this devolution of power. Many experts agreed that water should be managed on a local, or regional level and should not be dictated by political boundaries. While political boundaries are a reality, some suggested that "more centralized, comprehensive agencies dealing with watersheds" might be better suited to address water challenges. Provincial governments can step in here to develop watershed management plans.

Throughout the discussions, there was an emphasis on the need for water to be holistically managed. One expert pointed out that "siloing" water needs (e.g., irrigation, municipalities) can result in unintended consequences for some users: if one use is diverted to supply another use, the community as a whole may have a social problem. The solution, then, is for managers to assess the broad needs of the community, "all of those things that are economically, physically and socially connected," and make water-allocation decisions from there.

Many participants felt that politics needs to be removed from decision-making on water issues. However, this may be more of a wish than a possible reality and many experts recognized the difficulties of making this separation. Small steps can be taken, though; once again, the need for a provincial, independent body that is tasked with making water allocation decisions was reiterated. In Alberta, this is a suggestion that has recently been made by the Premier's Council for Economic Strategy. The suggestion of the Council is to "create the Alberta Water Authority, an independent organization that will ensure optimal water management across the province." The Water Authority, would, according to the report, be responsible for allocation. Creating an independent body to manage water would likely result in the creation of more long-term plans for water management that would not change according to political whims.

ii) Pricing

Using financial or market-based mechanisms for water management is a tool that is often discussed in water policy circles. At the *Roundtables*, there was a great deal of discussion on water pricing and its complex nature. Participants acknowledged that changing the way that water is currently priced is extremely difficult, both politically and in terms of policy-design. Water is not just an economic good. It is also a social, cultural and environmental good. Any price should reflect the multi-dimensional nature of water. Additionally, water can have different values for different stakeholders. Commercial users for instance, might put a higher value on water than household consumers, because commercial users rely on water to run their business. Allowing water to remain in a wetland may have no immediate economic value, but it still is valuable for the environment and sustainability. Also, policy-makers must be aware of possible issues of inequity (e.g., farmers might not be able to afford the same prices as other large-scale users, such as oil and gas developers).

If nothing else is done, those experts in favour of pricing agreed that at minimum, governments should ensure that full-cost pricing comes into effect, where users are charged for the water they use and the charges are high enough to cover basic costs associated with its use (e.g., treatment and conveyance). Further, many experts felt that users should be charged for pollution. Finding the right price points to motivate change, however, is a prickly task. Nonetheless, the common sentiment was that there is a disconnect between the current cost of water in western Canada, the way it is used, and increasing demand. Decision-makers will need to reconcile these three points.

Not all participants were in favour of using pricing mechanisms for water management. Support was nearly unanimous in British Columbia and Alberta, while those in Saskatchewan had little if any support for pricing. While there was some support for pricing in Winnipeg, there was greater emphasis on defining the value of ecological goods and services, rather than specific discussions around price points.

The need for drought management and flood control was constantly emphasized across all provinces. Extreme weather events emphasize the importance of proactively addressing water availability and competing uses, particularly when water is scarce. The participants felt that ensuring that suitable plans are in place should be a policy priority.

One major challenge for policymakers going forward will be making economic and environmental trade-offs. How can we balance the needs of the environment with extractive uses of water for human consumption and economic development?

Societal Attitudes and Public Awareness

"We are disconnected and unaware of how much we need water."

Societal attitudes can be difficult to change. Many experts mentioned the water habits of western Canadians and the value that society at large places on water. Although we as Canadians do value water and use it for a variety of purposes—recreation, domestic use, as an economic input, and for the environment—often people are extremely resistant to any policy changes that will mean significant alterations of current habits.

"Our society values water, but in a strange way. People don't mind paying upwards of $80 each month for cable and Internet, but if their water bill increases from $30 to $36, they have a fit."

Improving awareness of water issues among the public is one way to change societal attitudes and consumer habits so that government policies related to water management are welcomed, rather than met with resistance. Experts urged that education and awareness campaigns currently underway should continue and must be a priority for governments. Awareness efforts should help people understand the vulnerability of western Canada's water resources, the multi-dimensional nature of water (as a social, cultural, environmental and economic good) and dispel the myth of water abundance. Improved water literacy will lead to the development of a water ethic among western Canadians. That is, the participants hoped that citizens would understand the immense value and multi-dimensional nature of water, and use it in a way that reflects its value.

One major suggestion for governments was that in order for a water literacy campaign to be a success, it must bridge the urban-rural divide that currently exists. The majority of water issues in western Canada tend to play out in the countryside. The challenge is that for those in urban centres, water is virtually a non-issue. Very rarely are there water shortages or quality problems. When the tap is turned on, water flows out. Water in the countryside is often completely different. Those on reserves and in rural and remote areas often are advised to boil water, may experience shortages, contamination of wells, and less reliable infrastructure. The challenge policymakers face is "…trying to connect the water issues on the rural landscape with an urban population. How do you drive home the importance of these issues to an urban electorate?" Water is, after all, inherently personal. If individuals are affected by water challenges, it is likely that they will become engaged and educated in water matters. A good example is that of Okotoks, Alberta. When the Alberta government closed the South Saskatchewan River Basin in 2006, the town scrambled to find new water sources to meet its burgeoning population. If water challenges can become "personalized" even for those who are not directly affected by them, it is likely that water literacy will improve.

Experts recognized that changing societal attitudes and increasing public awareness of water issues are essential, but will likely be a slow process. However, they reiterated that by starting now, it can be ensured that the next generation will have a solid understanding of the centrality of water to western Canada's economy and quality of life, and use water in a way that reflects its value.

While these policy and research priorities—planning for the unknown, clearing up "muddy waters," improving governance, valuing natural capital, improving management and policy and changing societal attitudes—are large in and of themselves, they are all linked together. For example, if the federal government were to elevate water policy on its agenda, it is likely that public literacy and interest would improve. Therefore, decision-makers should not feel overwhelmed by these tasks, but should realize that even addressing one of these priorities will likely set off a chain reaction.

Differences Across the West

"What happens water-wise in other countries will affect our quality of life here."

There were more similarities than differences among the four provincial discussions. Although some themes were more prominent in some provinces than in others, overall the differences among the provinces lay not in overarching issues such as governance and concern for the future, but in local challenges based on climatic and geographical variations. The two most prominent differences were in Manitoba, where a good deal of the discussion centered on Lake Winnipeg, and in Alberta, where participants focused on additional topics that did not receive much attention at other *Roundtables*. Alberta in particular stood out because of the immediate water challenges that those in the southern half of the province are facing. In Saskatchewan, some discussion was focused on Canada's place in the global context.

In Manitoba, most water challenges are related in some way to Lake Winnipeg. There are abundant algae blooms in the lake due to excess nutrient loading, which most participants traced to a variety of sources, including irrigation and municipal wastewater run-off. However, those in Manitoba stressed that the condition of Lake Winnipeg should act as an early warning for those living upstream and outside the basin. If other provinces do not move to protect against nutrient loading of their water sources, a similar dilemma may occur.

The discussion in Alberta was much more detail-oriented than the other three discussions. Alberta participants zeroed in on the following topics:

- Over-allocation of the southern tributaries: This is a significant challenge in southern Alberta—one that dominates all water management issues in the region.

- Water technology: Participants in Alberta focused a lot of their discussion on water efficiency technology. Participants recognized that Alberta has the potential to lead in this area, but is not taking the steps toward it: "…the opportunity for technology [is something] that I don't think we've explored in any significant way in Alberta…".

- The Water for Life Strategy: Alberta's water legislation is enshrined in the *Water for Life Strategy*, which came into force in 2003. While discussion around the strategy was positive, it was acknowledged that there was a gap between the principles in the strategy and action: "The gap is putting it into action; it takes time, effort and persistence. And most politicians don't have persistence when it comes to policy outcomes that have implications for 20 years from now." It was felt that the Alberta government should play a larger role in stepping forward and acting on behalf of the environment if any water markets arise in the southern part of the province. Additionally, concern was expressed that the water strategy and Alberta's land use policies are not integrated. There was a discussion about municipalities growing without properly considering future water supply. Discussions about specific pieces of legislation were not as prominent at other *Roundtables*.

In Saskatchewan, one element that was unique was the focus on Canada in the global context. It is important, it was stressed, that decision-makers make water choices with the global context in mind, and with awareness of what is happening in other countries. While water is best managed on a local level, governments at large must think about Canada's global positioning and the best use of our water resources. Is it to grow food for export? Is it to produce hydropower? Making decisions within a global context will ensure that Canada not only gets the maximum benefits from its rich natural resources, but that its economy thrives as well.

Conclusion

"Talk about the opportunity, talk about how great it will be if you get it right. Talk about how beautiful it will be, how prosperous it will be…We need to have this collective vision of how good it could be if we got this right."

The water challenges facing western Canada are large, and the ability of policymakers to address them sooner or later will be of critical importance. Despite the difficulties associated with water management going forward, most participants expressed optimism and talked about the opportunities that may result from learning how to deal with new water issues. Perhaps the most important finding from the *Roundtables* was that it is clear that there are more similarities than differences among the views of water policy experts across the West. This outcome indicates that there is, overall, a western Canadian outlook when it comes to water policy, and also a similar sense of priorities. Water has the potential to not only be the defining issue for western Canada in the coming years, but the issue that knits the provinces of western Canada closer together.

This is the time for decision-makers to capitalize on the sentiment shared within the water policy community, and begin to take action on the priorities identified in this paper. Perhaps most essential is the need to address data shortages, the polarized state of the water conversation, unclear terminology and the weak link between research and policy. The water policy community forms the base for knowledge, research and expertise on water issues in Canada. If the state of the water conversation can be improved, and if data and research—the foundations of strong policy—can be improved upon, water challenges will be addressed with greater ease.

In order for the foundation of water policy to be strengthened, it was made clear by the participants that governments—particularly the federal government—need to take greater positions of leadership when it comes to water matters. Good water management is guided by good governance structures, the participants stressed. Overall, there was repeated recognition that water is best managed on a local scale, but within a provincial or regional framework, both of which should be guided by federal standards. In most cases in western Canada, the responsibility of water management has continued to move down to lower and more local levels, and while this is a positive development, experts felt that the resources needed to manage water on a local scale have not followed this devolution of power.

The depth and breadth of the topics highlighted in this report demonstrate just how complicated water policy is—and how much work there still is to be done. Policymakers can take heart that there is a western Canadian outlook when it comes to water policy. While the priorities identified by the participants—planning for the unknown, clearing up "muddy waters," improving governance, valuing natural capital, improving management and policy, and changing societal attitudes—are large in and of themselves, they are all linked together. For example, if the federal government were to elevate water policy on its agenda, it is likely that public literacy and interest would improve. Therefore, decision-makers should not feel overwhelmed by these tasks, but should realize that even addressing one of the many priorities identified would likely set off a positive chain reaction. And although the consultations were only held in western Canadian cities, the findings and recommendations derived from them are applicable on a nation-wide scale and are likely to be of interest to individuals living outside the West.

The Canada West Foundation would like to thank the participants and co-hosts for the rich insights into western Canadian water policy they provided. We hope we captured the essence of the discussions in these pages, and that the rich source of ideas presented here will help advance the water policy discussion in Canada.

Appendix: Roundtable Participants

Names of Co-hosts are in blue

LAST NAME	FIRST NAME	TITLE	ORGANIZATION
Atkinson	**Michael**	Executive Director and Professor	*Johnson-Shoyama Graduate School of Public Policy, University of Saskatchewan*
Bjornlund	**Henning**	Canada Research Chair in Water Policy and Management	*Department of Economics, University of Lethbridge and Centre for Regulation and Market Analysis, University of South Australia*
Bradley	**Cheryl**	Director (Secretary)	*Southern Alberta Group for Environment (SAGE)*
Brandes	**Oliver**	Co-Director of the POLIS Project and Water Project Lead	*POLIS Project on Ecological Governance, University of Victoria*
Brandson	**Norm**	Co-Chair	*Forum for Leadership on Water (FLOW)*
Bruce	**Greg**	Head, Industry and Government Relations	*Ducks Unlimited Canada*
Carson	**Tom**	Director, Manitoba Office	*Canada West Foundation*
Chorney	**Doug**	President	*Keystone Agricultural Producers*
Clipsham	**Fred**	Councillor	*Regina City Council*
Corps	**Christopher**	Executive Vice President	*Sequel IRM Inc.*
Curran	**Deborah**	Project Director of the Environmental Law Center	*Faculty of Law, University of Victoria*
Dunford	**Clint**	President	*Clint Dunford Consulting Inc.*
Dybvig	**Wayne**	President	*Saskatchewan Watershed Authority*
Eaton	**Brenda**	Board Member, Chair	*Canada West Foundation and BC Housing Management Commission*
Frost	**Richard**	CEO	*The Winnipeg Foundation*
Giesy	**John P.**	Professor and Canada Research Chair in Environmental Toxicology	*Department of Veterinary Biomedical Sciences, University of Saskatchewan*
Gober	**Patricia**	Professor	*Johnson-Shoyama Graduate School of Public Policy, University of Saskatchewan*
Greenfield	**Cliff**	Manager	*Pembina Valley Conservation District*
Halliday	**Robert**	President	*R. Halliday & Associates*
Hawkins	**Jessica**	Manager, Fraser Salmon and Watersheds Program	*Fraser Basin Council*
Hill	**David**	Program Director	*Alberta Water Research Institute*

Holweger	**Ute**	Acting Technical Director, Manitoba Region	*Agriculture and Agri-Food Canada*
Hudson	**Jeff**	Aquatic Scientist, Professor of Biology	*University of Saskatchewan*
Klein	**Kurt**	Professor	*Department of Economics, University of Lethbridge*
Kolk	**John**	Manager	*Kolk Farms Conrich Ltd.*
Kristofferson	**Al**	Managing Director	*Lake Winnipeg Research Consortium*
Kriwoken	**Lynn**	Director, Water Protection and Sustainability Branch	*British Columbia Ministry of Environment, Environmental Sustainability Division*
Kunin	**Roslyn**	Director, British Columbia Office	*Canada West Foundation*
Lamb	**Susan**	CEO & Managing Partner	*Meewasin Valley Authority & Partners for the Saskatchewan River Basin*
Liber	**Karsten**	Executive Director and Professor	*School of Environment and Sustainability, University of Saskatchewan*
Lieff	**Sam**	Manager, Geo-Imagery Sales and Business Development	*Iunctus Geomatics Corporation*
Lindsey	**Anne**	Executive Director	*Manitoba Eco-Network*
Lobb	**David**	Senior Research Chair, Watershed Systems Research Program	*University of Manitoba*
M'Gonigle	**Michael**	Eco-Research Chair in Environmental Law and Policy	*POLIS Project on Ecological Governance, University of Victoria*
Martz	**Lawrence**	Dean, College of Graduate Studies and Research	*University of Saskatchewan*
Mattison	**James S.**	Water Policy Consultant	*(Former Assistant Deputy Minister, Ministry of Environment, Government of British Columbia)*
McDougal	**Rhonda**	Director, Planning and Coordination	*Manitoba Water Stewardship*
McGee	**Dave**	Senior Water Policy and Implementation Manager	*Alberta Environment*
McMullin	**Ron**	Executive Director	*Alberta Irrigation Projects Association*
Norman	**Emma S.**	Postdoctoral Fellow	*Program on Water Governance, Department of Geography, University of British Columbia*
Norquay	**Don**	Deputy Minister	*Manitoba Water Stewardship*
O'Riordan	**Jon**	Adjunct Professor	*School of Community and Regional Planning (SCARP), University of British Columbia (Former Deputy Minister, Ministry of Sustainable Resource Management, Government of British Columbia)*

Paterson	**Brent**	Executive Director	*Irrigation and Farm Water Division Alberta Agriculture and Rural Development*
Peterson	**Joel**	Head, Industry and Government Relations	*Ducks Unlimited Canada*
Richardson	**Royden**	Vice Chairman	*GMP Investment Management L.P., son of the late Honourable James A. Richardson*
Richardson	**Shirley**		*Spouse of the late Honourable James A. Richardson*
Rood	**Stewart**	Professor and Board of Governors Research Chair in Environmental Science	*Department of Biological Sciences, University of Lethbridge*
Sloan	**David**	Board Member, Vice Chair	*Saskatchewan Association of Watersheds*
Sopuck	**Tim**	CEO	*Manitoba Habitat Heritage Corporation*
Supynuk	**Jim**	Board Member	*Saskatchewan Association of Watersheds*
Swain	**Harry**	President	*Trimbelle Investments Ltd. (Formerly with the Centre for Global Studies and the Pacific Climate Impacts Consortium, University of Victoria)*
Venema	**Hank**	Director, Sustainable Natural Resources Management	*International Institute for Sustainable Development*
Wheater	**Howard**	Canada Research Chair in Water Security	*School of Environment and Sustainability, University of Saskatchewan*

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