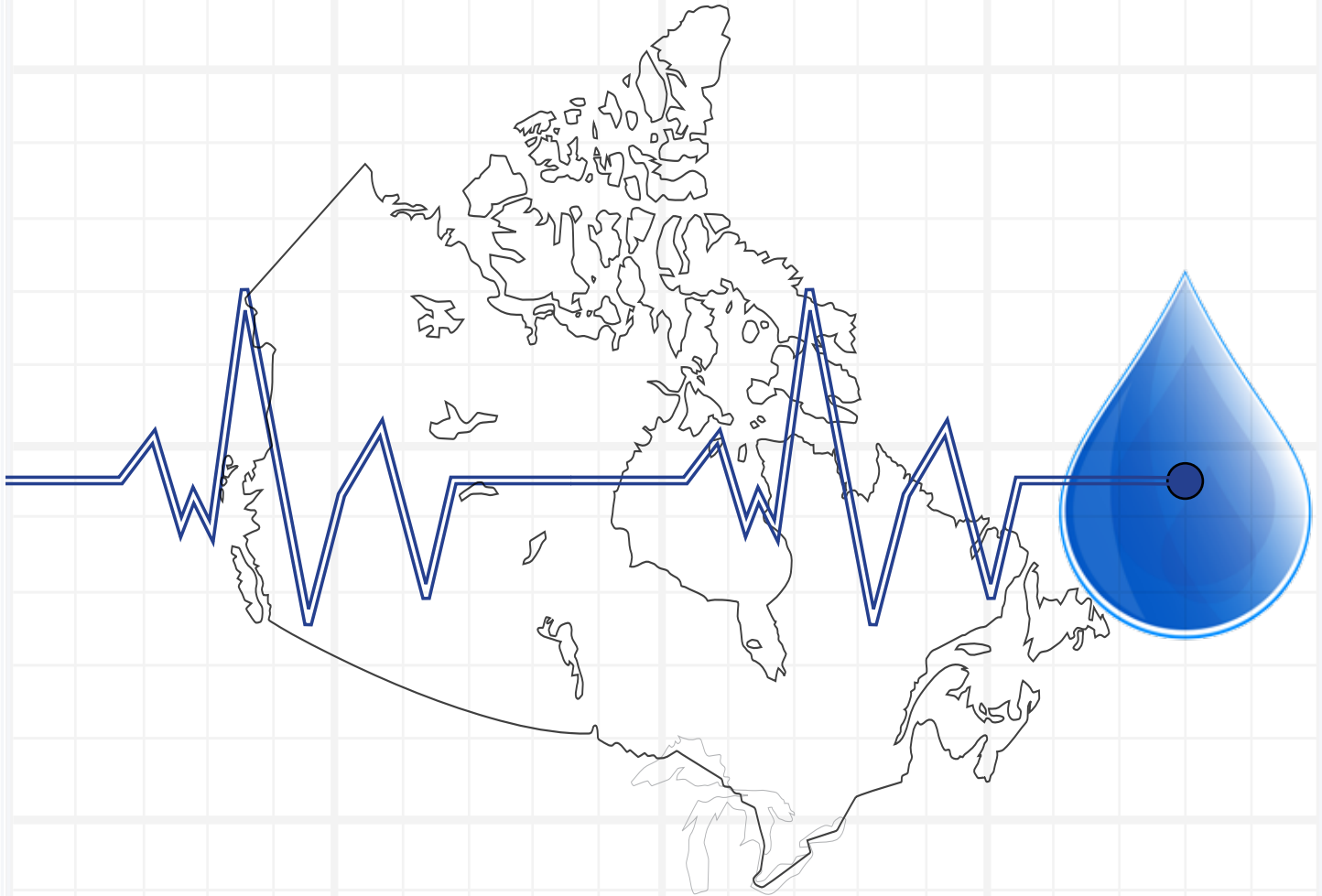


CROSS-CANADA CHECKUP

A CANADIAN PERSPECTIVE ON OUR WATER FUTURE

By Jesse Baltutis & Timothy Shah

with Oliver M. Brandes, Nancy Goucher, Deborah Harford & Robert Sandford



Proceedings from the
“Northern Voices, Southern Choices: Water Policy Lessons for Canada”
2011 National Discussion Series Tour
Hosted by the Forum for Leadership on Water (FLOW)

May 2012



POLIS Project
on
Ecological Governance
University of Victoria



SIMON FRASER UNIVERSITY
THINKING OF THE WORLD



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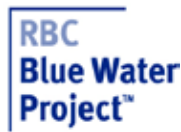
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The authors have tried to report with as much accuracy as possible the opinions heard across the country at each panel discussion. This report attempts to capture comments from panellists and participants without imposing analysis or judgment.

EXECUTIVE SUMMARY

To date, water resources have been overused and their true value has been underappreciated in Canada. In light of current and forthcoming challenges, including the significant consequences of a changing climate, it is becoming increasingly clear that a new paradigm of water management and policy will be needed in this country. This report offers a perspective on current and emerging water challenges and priorities across Canada through the presentation of issues heard and discussed at the Forum for Leadership on Water's (FLOW) national discussion series tour "Northern Voices, Southern Choices: Water Policy Lessons for Canada," held in fall 2011.

Bob Sandford, a leading Canadian water expert and co-chair of FLOW, travelled across the country to share lessons learned from the Northwest Territories' recently drafted *Northern Voices, Northern Waters: NWT Water Stewardship Strategy*. The goal of the tour was to develop a sense of how the *NWT Water Stewardship Strategy* could serve as a model for water policy reform in the rest of Canada, and to hear from southern Canadians on the critical water challenges they are facing. Various water experts joined Bob Sandford at many of the tour stops to offer regional perspectives on water challenges, and to comment on the main messages of the tour.

This document elaborates on the water challenges facing Canadians and reports on what Bob Sandford heard from the panellists and audiences during the course of the two-month, 16-city tour. Each province and territory faces a unique set of water-related challenges and concerns; however, the tour revealed themes that cut across provincial and jurisdictional borders, illustrating the interrelatedness of many water issues common to all Canadians regardless of geographical location:

- The *Northern Voices, Northern Waters: NWT Water Stewardship Strategy* provides a useful example for water policy reform for southern Canada, and beyond.
- Integrated resource recovery—redesigning our infrastructure systems in an integrated and holistic man-

ner to maximize the recovery of "value" from solid and liquid resource streams—is becoming a key feature of urban development in British Columbia.

- It is important for Alberta to engage with the NWT to determine how best to manage water quality and quantity in the Mackenzie Basin, which is shared by both jurisdictions.
- In Saskatchewan and Manitoba, both flooding and water shortages due to droughts are having ongoing and serious impacts, regularly resulting in millions of dollars in damages.
- Ontario's 2010 *Water Opportunities and Water Conservation Act* is a model for how jurisdictions can approach water conservation in an innovative fashion.
- Sea level rise, combined with severe storm surges, will have increasing impacts on infrastructure and property in Nova Scotia, New Brunswick, and Prince Edward Island.

Across the country, the example of the *NWT Water Stewardship Strategy* galvanized public opinion around recognition of the need for a national water strategy, and inspired communities to improve cooperation and collaboration regarding water resource management. The panellists and audience members at each tour stop produced fruitful discussion on how each province can make progress on water policy reform and ways the federal government could exhibit leadership.

We must shift the narrative and action on Canada's most precious resource to one that ensures *prioritization of water allocations for environmental flows, conservation of water for future generations, and collaborative decision-making processes*. We must create a new national vision for understanding the value of water and for using it in the wisest and most sustainable way possible, now and in the future.



TABLE OF CONTENTS

Executive Summary.....	1
A Canadian Perspective on Our Water Future.....	3
Conversations with Canadians on Water.....	4
Inspiring Change: Water Governance in the NWT.....	6
Northern Voices, Southern Choices Cross-Canada Tour.....	8
Tour Specifics: Where, When & What Was Heard.....	9
Saskatchewan: From Flooding to the Water-Energy Nexus.....	10
Nova Scotia: Sea Level Rise & Dynamic First Nations Involvement.....	14
Manitoba: How to Avoid the Hydro-Climatic Time Bomb.....	16
Ontario: Conservation on the Rise—Ontario’s Renewal.....	18
Quebec: Water & the Political Game.....	20
British Columbia: A Time for Governance Reform.....	23
Alberta: What’s So Valuable About a National Water Strategy?.....	28
Moving Forward in Southern Jurisdictions.....	30
Conclusion.....	31
Final Reflections from Bob Sandford.....	32
Appendix A: National Tour Moderators and Panellists.....	34
Appendix B: National Tour Partners.....	36
Endnotes & Sources.....	37

A CANADIAN PERSPECTIVE ON OUR WATER FUTURE

In the fall of 2011, the Forum for Leadership on Water (FLOW) hosted the national discussion series tour “Northern Voices, Southern Choices: Water Policy Lessons for Canada” which spanned two months and 16 Canadian cities. Bob Sandford, a leading water expert and co-chair of FLOW, visited cities in southern Canada, from coast to coast, to discuss the need for water policy reform and the merits of the approach taken by the Government of the Northwest Territories in developing its water stewardship strategy, *Northern Voices*, *Northern Waters*, as a possible model for other regions.

These sessions offered an opportunity to identify and discuss the concerns and issues related to water resources management raised by Canadians across the country. The diversity of questions and identified opportunities serve to illustrate the complexity of water resource management and governance issues in this country. Bob Sandford heard that people are concerned

about the continued focus on supply-side management and the relatively low priority of water conservation. Canadians are also acutely aware of the need for a more fundamental analysis of how we use our water supplies, and why we make certain choices to use water in the ways we do.

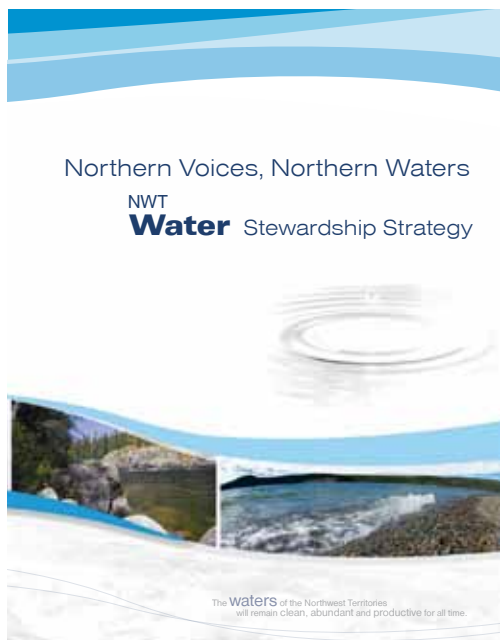
The concerns expressed on the tour signal that Canadians are indeed ready for a fundamental shift in how we view water and our connection to it; how we manage it and plan for the future; and, importantly, how we govern it. The cross-Canada tour made clear the urgent need for a more fulsome discussion about what a national water strategy might look like, the attributes it must possess, and the priorities it must emphasize. The complexity and political nature of the issues raised reveals a significant challenge for water policy reform in this country. This challenge, however, cannot be ignored.



CONVERSATIONS WITH CANADIANS ON WATER

PURPOSE OF THE TOUR

FLOW's 2011 national discussion series tour was designed to catalyze dialogue and also communicate to communities in southern Canada the innovative approach to water management recently developed in the Northwest Territories.



The Northern Voices, Northern Waters: NWT Water Stewardship Strategy was released in May 2010 after a three-year collaborative consultation process

The *Northern Voices, Northern Waters: NWT Water Stewardship Strategy* offers important lessons for the rest of Canada. Many jurisdictions, in Canada and abroad, can benefit from understanding how the strategy was developed and the steps now being taken for its implementation. The development of the *NWT Water Stewardship Strategy* deserves special recognition in Canada as a progressive water strategy. After a three-year collaborative partnership between territorial and federal government agencies, Aboriginal and community governments, as well as environmental organizations, regulatory boards, industry, academic institutions, and the general public, the Government of the Northwest

Territories released the *Northern Voices, Northern Waters: NWT Water Stewardship Strategy* in May 2010. The strategy grew from the guiding principles and goals that had been set out by all the partners involved in the three-year engagement process, which outline a path for achieving an innovative approach to water management in the NWT.

One of the elements that most distinguishes the *NWT Water Stewardship Strategy* from other water policy documents is its principle of ensuring the full acceptance and incorporation of traditional ecological knowledge to achieve effective governance of land and water. This explicit acknowledgement of the value of First Nations' and local knowledge is a key strength of the strategy and one of the reasons it provides a strong model for water policy reform in other areas of the country.

The water-related challenges that communities are facing as a result of population growth, shifting demographics, and a changing climate was a common theme of discussion throughout the tour. The merits of the NWT approach were explored and its potential as a foundation to a Canadian water strategy was discussed in detail. Most importantly, attendees expressed their ideas for improved water management, both locally and nationally, to move Canada towards a sustainable water future.

PURPOSE OF THE REPORT

This report is a synthesis of the themes, perspectives, and information shared by Bob Sandford, the panellists, and audience members in each of the cities on FLOW's cross-Canada tour. Although some water challenges are still relatively unknown to many Canadians, water has the power to bring people together to find common ground and work together to develop lasting partnerships, as demonstrated by the *NWT Water Stewardship Strategy*. A 2010 survey by the Royal Bank of Canada and Unilever Canada found 50 per cent of Canadians

believe water is the country's most valuable resource, more valuable than oil and gas.¹ Water is part of the national identity of Canada, and is a natural resource that many Canadians feel is one of our most precious.² These attitudes were echoed in the results of a 2010 poll on British Columbia perspectives on fresh water, where 91 per cent of British Columbians agreed that fresh water is BC's most precious resource (see Key Concept Box 1).³

The importance of water to Canadians was clearly expressed in each city Bob Sandford visited. The absence of an up-to-date and comprehensive national water strategy (the 1987 *Federal Water Strategy* has never been fully implemented), coupled with present and emerging threats—the most crucial of which are a changing climate and its inevitable impacts on the hydrological cycle—will have severe consequences on our environment and economy. By consolidating the questions and concerns heard during the tour, this report highlights the opinions that many Canadians hold regarding water and the way our water resources are currently managed. The implications of the discussion points identified in this report will be useful for decision makers, researchers, and policy analysts who are faced with the monumental challenge of addressing the impacts of a changing water cycle on local communities while, at the same time, ensuring watershed health and function and long-term water security. With this challenge comes tremendous opportunity to make real and significant progress towards new ways of thinking and new approaches that better address the needs of citizens as integrated with the needs of nature.

ORGANIZATION OF THE REPORT

University of Victoria's POLIS Project on Ecological Governance and Simon Fraser University's Adaptation to Climate Change Team (ACT) worked together to consolidate the key messages expressed on the tour. This document reports on what was heard, and offers a snapshot of current water issues and areas of concern to Canadians. The main body of the report is organized chronologically by tour date and reports on the issues raised by Bob Sandford and the panellists during the tour. At each stop, the panellists responded to the ideas presented during Bob Sandford's talk, drawing on their own expertise and local contexts, as well as wider global issues, such as increasing water scarcity and a changing climate. Audience members then raised their own issues, concerns, and questions in response to the comments from panellists and Bob Sandford. The

key points of these discussions are summarized in this report and, to assist the reader, "Key Concept Boxes" are included that explain specific key terms and concepts introduced in the body of the report. These boxes are supplementary information and draw on expert sources.

The report is designed to act as a resource for those involved at all levels of decision-making on water and climate issues. The intent of this report is not to come up with specific steps on how best to develop a national water strategy for Canada.⁴ Instead, this report highlights that a national water strategy must draw on a contemporary picture of the state of water affairs in Canada. Such a process could provide effective guidelines on how to address major water issues being raised across the nation. As well, this report is meant to bring the issues and challenges Canadians face around a sustainable water future to the forefront of political discussions, so that all Canadians are aware of the challenges that we must address collectively as a nation.

KEY CONCEPT BOX 1 BC PERSPECTIVES ON WATER

The results of a recent poll conducted in British Columbia emphasize the critical concerns that BC's citizens have about water. Ninety-one per cent of British Columbians agree that fresh water is BC's most precious resource. More than six in ten British Columbians feel that current water governance is not enough to ensure the future sustainability of BC's freshwater resources, with a majority strongly supporting new rules for water governance in the province.

Source on page 39

INSPIRING CHANGE: WATER GOVERNANCE IN THE NWT

FLOW'S ANALYSIS

The NWT released its water stewardship strategy, *Northern Voices, Northern Waters*, in May 2010, promoting a vision for a common territorial water management strategy based on a solid foundation of extensive consultation and collaboration with stakeholders across the territory (see Key Concept Box 2). The strategy was developed in partnership with the Government of the Northwest Territories, Aboriginal Affairs and Northern Development Canada, Aboriginal governments and community leaders, as well as those who play a role in water stewardship in the NWT. Ultimately, it was signed off by both the Government of the Northwest Territories, as well as Aboriginal Affairs and Northern Development Canada.

This led to an innovative approach to water management in the territory that sets out to:

- Include the majority of Aboriginal governments in the NWT as partners alongside federal and territorial governments to guide development of the strategy;
- Incorporate traditional ecological knowledge, as well as the concerns and values of First Nations, Métis, and Inuvialuit, into the stewardship framework;
- Recognize the need for effective monitoring and research programs;
- Integrate an ecosystems-based, holistic approach to water management; and
- Incorporate the principles of adaptive management in decision-making.⁵

FLOW members note that the NWT has the potential to be an international, precedent-setting example of good water management that other jurisdictions may wish to emulate. The *NWT Water Stewardship Strategy* is premised on sustaining river flows, aquatic ecosystem health, and the ecosystem services that make life on earth habitable for all living organisms, while

KEY CONCEPT BOX 2

THE NWT WATER STEWARDSHIP STRATEGY IN A NUTSHELL

Vision: The waters of the Northwest Territories will remain clean, abundant, and productive for all time.

Key objective: Waters that flow into, within, or through the NWT are substantially unaltered in quality, quantity, and rates of flow.

Respect for all ways of knowing: Water stewardship decisions are based on accurate and up-to-date traditional, local, and western scientific knowledge.

Adaptive management: As knowledge evolves, stewardship decisions evolve accordingly.

Precautionary principle: Where there are threats of serious or irreversible damage to aquatic ecosystems, lack of certainty is not used as a reason to postpone effective measures that can avert the potential threat.

Source on page 39

simultaneously protecting Northern cultures and important aspects of traditional ways of life in the midst of a changing climate and rapidly expanding petroleum and mining industries in the North.⁶ One of the elements that most distinguishes the *NWT Water Stewardship Strategy* from other water management strategies is that it recognizes the importance of bridging science and public policy to help sustainably address water governance and management challenges—an important lesson for the rest of Canada, and beyond.⁷

FLOW'S NWT SYMPOSIUM

In January 2011, FLOW, in partnership with the Government of the Northwest Territories and funded by the RBC Blue Water Project, convened a forum of water experts, decision makers, and community leaders in Yellowknife. The forum was designed to address emerging water challenges, persistent management problems, and new forms of participatory governance and collaborative decision-making in the NWT. It focused on the implementation of *Northern Voices, Northern Waters: NWT Water Stewardship Strategy*.⁸

The primary purpose of the conference was to review the processes used to develop the strategy, discuss its foundational principles, and seek advice related to its implementation from a diverse group of water policy and management experts belonging to and associated with FLOW. The *NWT Water Stewardship Strategy*, and the conference that emerged from its development, formed the initial impetus for considering the “Northern Voices, Southern Choices: Water Policy Lessons for Canada” national discussion series tour.

“THE GOVERNMENTS INVOLVED IN THE DEVELOPMENT OF THE *NWT WATER STEWARDSHIP STRATEGY* DID WHAT GOVERNMENTS ARE SUPPOSED TO DO. THEY DID WHAT WAS NECESSARY, NOT WHAT WAS EASY, AND THEY DID IT WELL.”

—BOB SANDFORD IN SASKATCHEWAN DURING FLOW'S 2011 NATIONAL DISCUSSION SERIES TOUR



NORTHERN VOICES, SOUTHERN CHOICES CROSS-CANADA TOUR

FLOW's national discussion series tour included stops in 16 cities across Canada between October 6th and November 22nd, 2011. At each event, Bob Sandford began by describing the water issues facing our country. Most significantly, this includes a changing climate, loss of climate stationarity, changing demographics, and increasing pressures on limited freshwater resources, as well as the growing cost to society due to extreme weather events. His presentation illustrated that Canada is now at a critical juncture as a result of outdated management approaches that emphasize supply-side development over watershed health and function. This has embedded a culture of wasteful water use in this country. A sustainable future, in which ecological integrity is assured for generations to come, requires all Canadians to rethink their connection to water, and begin to address the need for new forms of governance that organize our society around nature, rather than in disregard of it.

The following sections of this report provide a synopsis of the main issues, concerns, questions, and insights raised at each of the tour stops. The purpose is not to reiterate every point made, but to summarize general themes and topics that were raised by the panellists and audience members to give a flavour of local challenges, as well as cross-cutting concerns faced by provinces across the country.

KEY POINTS FROM THE TOUR

- Flooding and droughts will become more severe as our climate changes, costing billions of dollars in infrastructure damage and crop losses in the agricultural sector.
- Stressors on water resources are not only coming from a changing climate, but also from economic development.
- Non-point source water pollution from the agricultural sector has a profound impact on water quality.
- The water-energy nexus is both a significant challenge and a potential source of economic benefits and efficiencies for industry and municipalities.
- Political leadership and collaboration with diverse stakeholders is essential for improving water management and governance.
- Traditional ecological knowledge is a vastly untapped knowledge base for the management of natural resources.
- Governance at the watershed scale and collaboration with all stakeholders must be a core design principle of any progressive and resilient water management reform.
- A Canadian water strategy should be considered a vital element of, and priority for, current water policy reform at the federal level.

TOUR SPECIFICS: WHERE, WHEN & WHAT WAS HEARD



Regina, Saskatchewan
October 6, 2011

Saskatoon, Saskatchewan
October 7, 2011

Halifax, Nova Scotia
October 13, 2011

Sydney, Nova Scotia
October 14, 2011

Winnipeg, Manitoba
October 17, 2011

Toronto, Ontario
October 24, 2011

Waterloo, Ontario
October 25, 2011

Montreal, Quebec
October 26, 2011

Quebec City, Quebec
October 28, 2011

Nelson, British Columbia
November 4, 2011

Slocan, British Columbia
November 5, 2011

Vancouver, British Columbia
November 8, 2011

Victoria, British Columbia
November 9, 2011

Kelowna, British Columbia
November 10, 2011

Edmonton, Alberta
November 21, 2011

Calgary, Alberta
November 22, 2011

SASKATCHEWAN: FROM FLOODING TO THE WATER-ENERGY NEXUS

THEMES RAISED BY THE PANELLISTS

AGRICULTURAL RUNOFF AND WATER QUALITY

Most water pollution originates from non-point sources, such as agricultural runoff. Surface runoff and return flow from irrigated fields contain dissolved salts and other contaminants, such as chemical fertilizers and pesticides. These pollutants flow into nearby water-courses, or percolate through soil into groundwater supplies.⁹ Agriculture is Saskatchewan's leading industry and the largest consumer of provincial water resources (accounting for 67 per cent of the province's water use).¹⁰ The panel discussions revealed that agricultural runoff is of critical concern in Saskatchewan, in part because it affects the quality of drinking water in the province and also because it is a non-point source of water pollution, which makes it difficult to mitigate. Further, the potash industry of Saskatchewan has growing water needs, requiring large amounts of water during the refining process.¹¹

Dealing with water quality and agricultural runoff is a challenge that Saskatchewan will have to address in the coming years. The Province's current development of a new water strategy represents a potential opportunity to begin addressing the impact of agricultural runoff on the province's water resources.

FLOODING

Flooding is a major concern for many people in Saskatchewan, as was reflected in the panel discussion. Not only does flooding directly impact the quality of life for citizens, but it also affects how water infrastructure should be developed and managed. At the Saskatchewan tour stops, there was a real emphasis on the "new normal," which refers to a significant deviation from the climate conditions to which we are accustomed. This deviation, otherwise referred to in this document as "a loss of stationarity," (see Key Concept Box 3) refers to a shift towards climatic conditions that are outside our current frame of reference. Such a deviation means

REGINA MODERATOR

Dr. Dennis Fitzpatrick, VP Research, University of Regina

REGINA PANELLIST

Dr. David Sauchyn, Senior Research Scientist, Prairie Adaptation Research Collaborative; Professor of Geography, University of Regina

SASKATOON MODERATOR

Dr. Howard Wheeler, Canada Excellence Research Chair in Water Security; Director, Global Institute for Water Security, University of Saskatchewan

SASKATOON PANELLISTS

Dr. Patricia Gober, Professor, Johnson-Shoyama Graduate School of Public Policy, University of Saskatchewan; Research Professor and Professor Emeritus, School of Geographical Sciences and Urban Planning, Arizona State University

Dr. John Pomeroy, Canada Research Chair in Water Resources and Climate Change; Director, Centre for Hydrology, University of Saskatchewan

that we can no longer predict the frequency or severity of flooding based on historic records. As such, our traditional response mechanisms must be redesigned accordingly, which has considerable implications for existing plans that have been developed to adapt to a changing climate.¹² In southern Saskatchewan, for example, this loss of predictability of the frequency or severity of flooding has resulted in a review process of the operating rules for dams.



The increasing frequency and severity of floods in Saskatchewan is an example of the "new normal" for climatic conditions in the Canadian Prairies.

Photo: © Ducks Unlimited Canada/Calvin Fehr

KEY CONCEPT BOX 3 CLIMATE STATIONARITY

The term climate stationarity describes the idea that seasonal weather and long-term hydro-climatic conditions fluctuate predictably within an established range. This perceived stability permits a high degree of certainty when it comes to predicting and managing water, weather, and climate in natural systems, cities, and agricultural production. The concept of climate stationarity suggests, for example, that melt from winter snowpacks always contributes roughly the same amount of water to our rivers; changes in sea level occur slowly; hurricanes follow certain tracks; and tornadoes happen only in certain places, under circumstances we can predict. Climate stationarity also suggests that we should generally be able to predict how much the impacts of these events will cost.

Hydrologists and others have observed that it may be difficult to accurately gauge natural climate variability because climate and other planetary systems are constantly changing, and that influences such as climate change may be exacerbating the range of deviation we have developed as our concept of “normal” to date. The current measurable divergence from predictable patterns reinforces concern about the “loss of stationarity” and the role that human activities are having on the global climate. Our understanding of climate stationarity has been the foundation for how our buildings, roads, bridges, and other infrastructure are designed and constructed. Indeed, it is the foundation upon which we build our societies and plan for the future. Unfortunately, with a loss of stationarity this foundation no longer represents reality.

Sources on page 39

THE WATER-ENERGY NEXUS

The panellists conveyed that the concept of the water-energy nexus is emerging as a priority area of focus across the country (see Key Concept Box 4). One often-overlooked aspect of this nexus relates to the economic benefits and efficiencies of using less water, thus reducing the need for energy for pumping, storage, and waste-water management. In Saskatchewan, the panellists used the concept to explain the fact that water infrastructure systems in Canada are designed to serve peak water demand, such as lawn watering in the summer months. This wastes significant amounts of energy in pumping, treating, and distributing water. The panellists highlighted the fact that water conservation also reduces the total demand for energy, thereby reducing greenhouse gas emissions.

AUDIENCE DISCUSSION & RESPONSES

FOSTERING & STRENGTHENING WATER CHAMPIONS

Panellists identified building public interest in a particular issue, such as the sustainable management of water resources, as a crucial first step towards ensuring effective political leadership. The parameters of what that leadership should look like must be established and leaders must be actively sought out. Water champions need not be limited to government representatives, but

can also include those at universities and other organizations, especially those equipped to provide input on matters like a national water strategy.

Leadership takes many forms. At the discussion, it was noted that in Arizona the business community really understands the long-term challenge of a changing climate and its effects on economic growth. Local businesses in that region have become strong advocates for better water management and governance because they recognize that long-term economic opportunities would be severely limited by water shortages.

The challenge raised by this knowledge is, how do we efficiently and consistently deliver scientific information directly into the hands of political leaders in a form they can effectively use, in order to ensure public confidence in their ability to lead in an informed manner?

THE VALUE OF A WATER COMMISSION

The Saskatchewan discussion revealed uncertainty about the practicality of replicating the *NWT Water Stewardship Strategy* elsewhere in Canada. Concerns revolved around inflexible bureaucratic processes and the fact that the impacts of a changing climate may be less apparent, for now, in other parts of the country. Participants discussed the idea of a water commission as an opportunity for collaboration between government, academia, and water users. Such a commission could identify potential issues related to water across

the country; this would assist jurisdictions to better understand what they are facing, either imminently or in the future. The suggestion specifically called for a commission at the provincial and territorial level that would have the power to oversee and improve decision-making on water management and water policy reform, as well as contribute to the decision-making process.

As a point of note, ACT's October 2011 report *Climate Change Adaptation and Water Governance*,¹³ authored by Bob Sandford and used as a key resource during the national discussion series tour, includes a recommendation on the creation of a national water commission, mirroring similar priorities identified in recent FLOW and POLIS reports.¹⁴ The success of such a commission would require a water champion with substantial policy experience to catalyze its creation, as well as significant support to overcome the barriers certain to arise when senior governments are faced with the possibility of relinquishing some aspects of control over water. In order to be successful, such a commission would require effective public oversight and independence to ensure a high level of accountability and transparency.

PROVINCIAL WATER STRATEGY

The Province of Saskatchewan is currently working to develop a water strategy. The panellists noted that such a strategy must not only address issues related to a changing climate but also to the increasing global trade in “virtual water”—a significant issue for Saskatchewan, which supplies 10 per cent of the world's total exported wheat (see Key Concept Box 5).¹⁵

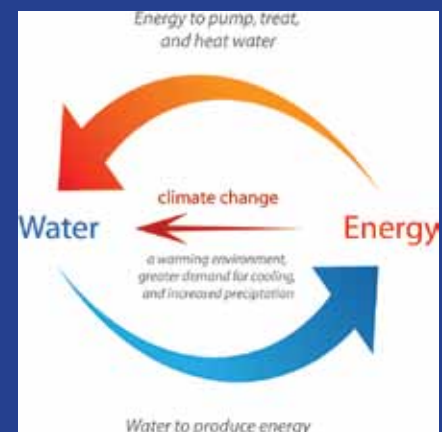
In this region, it is clear that the stressors on water resources are not only coming from a changing climate, but also from economic development—a common theme throughout Canada.

Panellists noted that a successful strategy would also address issues related to governance, specifically the problem of changing priorities with each elected government, which can make it difficult to sustain long-term political focus on issues. A system that emphasizes sustainability must extend water management beyond government and share responsibility for key decisions with those most impacted. Panellists in Saskatchewan

KEY CONCEPT BOX 4

THE WATER-ENERGY NEXUS

The water-energy nexus refers to the interconnections between water and energy production. The energy sector has a significant impact on the quality and quantity of water resources, as water is used to process and refine fuels; to generate hydroelectricity in, for example, large dams and run-of-river projects; to act as a steam condenser in thermal electric power plants; in the construction, operation, and maintenance of electricity generation facilities; and to dispose of energy sector wastes. As well, the provision of sufficient quantities of high quality water for municipalities, industry, and agriculture requires large amounts of energy to pump, treat, distribute, collect, re-treat, and release water through its entire human-use cycle. Though not yet an issue in Canada, desalination is perhaps the most energy-intensive form of making clean water, yet it serves to perpetuate many of the problems that give rise to the need for it in the first place.



A phrase, first used by Eric Mysak of WWF-Canada, that succinctly illustrates this relationship is “energy is a thirsty commodity.” For instance, it takes, on average, between two and four cubic metres of fresh water to produce one cubic metre of synthetic crude oil from the oil sands in Northern Alberta. In an era of rapidly changing climate, with changes in precipitation patterns and with water resources becoming increasingly stressed due to a variety of competing demands (e.g. energy production, municipal water supply, conservation requirements necessary to ensure adequate water for nature), it is becoming increasingly critical that we address issues associated with the water-energy nexus. Indeed, by reducing the amount of water and energy used in our homes, not only can we reduce the size of our water footprints, but also the cumulative impact on our watersheds (from which we source both water and energy), slowing the need for large, expensive, and often wasteful infrastructure projects.

Sources on page 39

highlighted the need to work more collaboratively to make decisions that benefit the public good. This includes collaboration between communities, stewardship groups, First Nations, and other groups with a vested interest in water. The sharing of responsibility can enhance accountability and must be complemented with a real commitment to transparency.

“SCIENTISTS IN CANADA HAVE BEEN TELLING US FOR SOME TIME THAT HUMAN ACTIVITY IS CHANGING THE COMPOSITION OF THE ATMOSPHERE...AND, ALL OF THESE CHANGES APPEAR TO HAVE SOMETHING TO DO WITH WATER.”

—BOB SANDFORD IN SASKATCHEWAN DURING FLOW’S 2011 NATIONAL DISCUSSION SERIES TOUR

KEY CONCEPT BOX 5 VIRTUAL WATER

The term “virtual water” refers to the total amount of water used to produce a product, for example the water “embedded” in goods such as wheat or rice. According to the Water Footprint Network, wheat has a water footprint of 1300 litres of water for every 1 kilogram of wheat produced. Global wheat production consumes about 790 billion cubic metres of water annually—12 per cent of the total water used for crop production globally. This is approximately six times the total volume of Manitoba’s Lake Winnipeg. For countries in arid regions, or where water resources are stressed or scarce, the import of virtual water can relieve pressure on domestic water resources to supply water-intensive goods. However, such trade in virtual water can also obscure the challenges of framing water limits in a local context, and thereby hinder the development of sustainable solutions for regions facing water stress.

Sources on page 39



Photo: ecstatist

NOVA SCOTIA: SEA LEVEL RISE & DYNAMIC FIRST NATIONS INVOLVEMENT

Photo: H. Reynolds

ROUNDTABLE DISCUSSION

FIRST NATIONS INVOLVEMENT IN WATER MANAGEMENT

An initial discussion theme raised during the Nova Scotia tour stops was the approach to water management being taken by First Nations in the Bras d'Or Lakes region of Cape Breton. When engaging First Nations, other provinces and jurisdictions may wish to consider the methods used in the Bras d'Or Lakes region as a basis for revising current approaches to addressing water challenges.

“Seven generation sustainability,” a principle championed by Aboriginal Peoples, is a concept that urges the current generation to live sustainably and work for the benefit of seven generations into the future. Bob Sandford learned that First Nations in the Bras d'Or Lakes region are cultivating young leaders to embrace the principle of seven generation sustainability and promote the inclusion of traditional ecological knowledge (TEK), in conjunction with western science, as a basis for decision-making and ecosystem-related management and planning (see Key Concept Box 6). By recognizing the value of traditional ecological knowledge coupled with scientific knowledge, new linkages can be formed to increase the resiliency of the social-ecological system by providing for communication and mutual understanding and learning that did not previously exist.

In a financially constrained environment with limited support from the federal and provincial governments, decision makers should be utilizing both TEK and scientific knowledge to maximize our understanding of, and help communities adapt to, climate change—an approach emphasized in the *NWT Water Stewardship Strategy*. By acknowledging both bodies of knowledge, decision makers can use a traditional knowledge base (which is well situated for understanding the local environment) supported by western scientific approaches to better understand the impacts of, and possible responses to, climate change.

HALIFAX & SYDNEY

In Halifax and Sydney there were no formal panellists. Instead, an informal roundtable approach was employed with session moderators. Bob Sandford presented and the audience explored the concepts and raised issues, questions, and concerns.

Despite problematic gaps in data and baseline monitoring of local ecosystems and the impacts of climate change, Nova Scotia's Bras d'Or Lakes region has five First Nations communities and five municipalities working collaboratively on adaptation. Indeed, the Collaborative Environmental Planning Initiative (CEPI), an established organization in the Bras d'Or Lakes region, arose in response to a request from the Cape Breton First Nations Chiefs in 2003 to develop an overall environmental management plan for the Bras d'Or Lakes and their watershed lands.¹⁶

KEY CONCEPT BOX 6 TRADITIONAL ECOLOGICAL KNOWLEDGE

Traditional ecological knowledge (TEK) has been defined as a “cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings with one another and with their environment.” Successive generations act as repositories of vast accumulations of traditional knowledge and experiences that link humanity through time. An increasing number of scientists and First Nations People believe TEK can offer modern societies many lessons for better understanding ecological processes, improving management of natural resources, and conserving biodiversity. TEK can also inform sustainable resource use more generally and, importantly, it offers a rich storehouse of valuable information and data about local ecosystems.

Sources on page 39

CHANGING HYDROLOGY: THREATS TO INFRASTRUCTURE

The changing hydrology of groundwater and surface water emerged as a major issue for Nova Scotia participants, who also expressed concerns about the province's aging and inadequately maintained stormwater and wastewater infrastructure. Climate models in the province project a 90-centimetre rise in sea level by 2100, and some projections suggest that 40 per cent of Nova Scotia's Cape Breton Island will be flooded by this time.¹⁷ Overall, sea level rise is a major concern across the province. At the Nova Scotia tour stops, discussion emerged about the importance of amending codes for buildings, structures, and stormwater and wastewater systems to cope with increased climate variability and possible seawater inundation caused by a combination of sea level rise and storm surges, driven by extreme weather events increasing due to a changing climate.

“IN THE FACE OF A CHANGING CLIMATE, THE COST OF KEEPING OUR INFRASTRUCTURE IN FUNCTIONAL REPAIR MAY, IN TIME, BE SUBSTANTIAL ENOUGH TO MAKE IT DIFFICULT TO SUSTAIN PROSPERITY AS WE KNOW IT.”

—BOB SANDFORD IN SASKATCHEWAN DURING FLOW'S 2011 NATIONAL DISCUSSION SERIES TOUR



Photo: D. Jarvis

Nova Scotia's Cape Breton Island faces the risk of coastal land loss and infrastructure damage from rising ocean water levels. Photo of Kidston Light House, Baddeck, Cape Breton Island.

MANITOBA: HOW TO AVOID THE HYDRO-CLIMATIC TIME BOMB

Photo: P. Perswain

THEMES RAISED BY THE PANELLISTS

LAKE WINNIPEG

Eutrophication is a condition that occurs in bodies of water when there is an overloading of nutrients, such as phosphorus or nitrogen, resulting in large algae blooms.¹⁸ This increase in nutrients is often caused by polluted agricultural runoff. In Lake Winnipeg, eutrophication is so prevalent it has become symbolic of the degradation of water in this region.¹⁹ Algae blooms have been an ongoing issue for Lake Winnipeg as far back as the 1930s,²⁰ but over the past five years the issue has gained more attention as the link with agricultural runoff has become more apparent. Degradation caused by eutrophication is also occurring in other lakes in the province, such as Lake Manitoba, as well as lakes in other parts of the Prairies.²¹

WINNIPEG MODERATOR

Helen Fallding, Manager, Centre for Human Rights Research Initiative, University of Manitoba

WINNIPEG PANELLISTS

Merrell-Ann Phare, FLOW Member; Executive Director, Centre for Indigenous Environmental Resources (CIER); Co-author with Bob Sandford of “Ethical Water: Learning to Value What Matters Most”

Norm Brandson, FLOW Co-Chair; Former Deputy Minister, Province of Manitoba

Vicki Burns, Coordinator, Lake Winnipeg Project

FLOODING

Flooding in the southern part of Manitoba was an important topic in the panel discussion. In the spring of 2011, flood-related damages exceeded \$700 million,²² and the Red River and Lake Winnipeg Basins experienced flooding and droughts in the same year—a rare occurrence. As a result of these extreme weather events, the Province’s ability to finance resulting infrastructure



Photo: B. Lank

Lake Winnipeg suffers from dramatic eutrophication, resulting in large algae blooms, as seen along the shores of this public beach. Photo from an episode of the CBC’s *The Nature of Things*.

rebuilt is becoming increasingly limited. Economic impacts are also being felt as a result of agricultural crop damage and loss.

MOVING FORWARD

The panellists noted that Manitoba is the only province in Canada with a Ministry of Water Stewardship, responsible for managing water in the province and developing a proactive provincial water strategy. This strategy will likely provide an effective foundation for responding to the province's water challenges.

AUDIENCE DISCUSSION & RESPONSES

PUBLIC ENGAGEMENT

The audience felt that legal action may be required to limit the pollution of Lake Winnipeg, and increased support is needed for grassroots initiatives, such as the community group Save Our Lake, to raise public awareness regarding water use. More pressure needs to be placed on the Province to drive accountability and encourage greater citizen involvement to keep water clean.

THE NEED FOR A NATIONAL WATER STRATEGY

A national water strategy should be considered a vital element of current policy reform, according to the Manitoba panellists and audience members. The public is frustrated by problems that they cannot resolve themselves, such as the eutrophication of Lake Winnipeg, and feel the bigger issues causing these problems are not getting the attention they deserve. A unified public voice that demands change, and a more collaborative governance approach, will allow meaningful reforms to be undertaken. Indeed, both are required to sufficiently elevate these issues on the political agenda to drive positive action.

LESSONS FROM THE NORTHWEST TERRITORIES

Participants discussed best practices that can be derived from the NWT approach to overcoming the obstacles of tight resources and jurisdictional fragmentation. The panel focused on First Nations' involvement in the *NWT Water Stewardship Strategy*; many people agreed that there was a great deal that could be learned from the NWT example, and that southern jurisdictions should support the NWT in their efforts to achieve resource sustainability and water policy reform.

CHANGING HYDROLOGY

Some expert hydrologists expressed fears that the region might be crossing the threshold into a new hydro-climatic state, with losses of current climatic stability. If this is indeed the case, Manitoba may be the first province in Canada to face permanent hydrological change as a result of combined land use and climate effects, highlighting the complex linkages between a variety of local influences in water, and raising concern about how hydrological impacts will affect individuals, industry, and the communities that will pay the costs of managing them in an increasingly uncertain future.

“THE ISSUES ARE SO IMMENSE AND COMPLEX IN MANITOBA THAT THIS PROVINCE—AND NOT THE ARCTIC—MAY BECOME CANADA’S FIRST CLIMATE CASUALTY.”

—BOB SANDFORD IN MANITOBA DURING FLOW’S 2011 NATIONAL DISCUSSION SERIES TOUR

ONTARIO: CONSERVATION ON THE RISE—ONTARIO'S RENEWAL

Photo: B. Schepers

THEMES RAISED BY THE PANELLISTS

CENTRALITY OF ECOLOGICAL INTEGRITY

Tony Maas, WWF-Canada's Freshwater Director, noted that a persistent lack of attention to protecting ecosystem values in Canada suggests that we do not generally understand the critical importance of sustaining the hydrological system. The *NWT Water Stewardship Strategy* values "water for nature" and articulates the need to protect supplies of water for nature first, to benefit ecosystems, the economy, and society, and ensure that water is available for human use in the long term. The key is to demonstrate this connection to policy makers, and to illustrate that water for nature is not a trade-off with water for humans and/or the economy. In fact, if we do not prioritize water for nature we will suffer the consequences, as the natural systems upon which all life depends begin to degrade and fail.

Since the Walkerton crisis in 2000, Ontario has been developing water legislation that has driven innovation in the water-quality sector. The panellists generally agreed that in Ontario there is currently supportive political leadership on water, and a set of legislative frameworks that address various aspects of water management, such as the *Safe Drinking Water Act* (drinking water, health-based), the *Clean Water Act* (source protection), and, most recently, the *Water Opportunities and Water Conservation Act* (water efficiency).

AUDIENCE DISCUSSION & RESPONSES

ECONOMIC DEVELOPMENT VERSUS ENVIRONMENTAL PROTECTION

The *NWT Water Stewardship Strategy* partially came about because it was the "right thing to do," leading the panellists to wonder if this notion of the "right thing to

TORONTO MODERATOR

Lynn Patterson, Strategy and Communications, RBC Blue Water Project

TORONTO PANELLISTS

Tony Maas, FLOW Member; Freshwater Director, World Wildlife Fund Canada

Brenda Lucas, FLOW Member; Senior Advisor, RBC Blue Economy Initiative

Dr. Rob de Loë, Research Chair in Water Policy and Governance; Professor, University of Waterloo

WATERLOO MODERATORS

Dr. Richard Petrone, Associate Professor and Director, Cold Regions Research Centre, Wilfrid Laurier University

Dr. Deborah MacLatchy, Vice-President: Academic & Provost and Professor of Biology, Wilfrid Laurier University

WATERLOO PANELLISTS

Dr. Chris Burn, NSERC Northern Research Chair, Carleton University

David Livingstone, Environmental Consultant with the Government of the Northwest Territories

Stephen Kakfwi, Former Premier, Government of the Northwest Territories

do" could drive change in other provinces and territories. The NWT model is built on consensus and partnerships, and those engaged in the process recognized that failure to reach agreement would result in significant implications for future generations. Those involved in creating the strategy recognized that it is not an issue of "development versus protection." Instead, development must be thought of in the context of environmental stewardship, and consensus must be the driving force for decision-making.

While development is necessary to ensure a robust and healthy economy, it must be undertaken in a sensitive way that benefits more than just the economy. It should improve the quality of life for local residents, and ensure that the natural environment is managed sustainably. For example, under the *NWT Water Stewardship Strategy*, water licences in the NWT can only be released if companies demonstrate that they have effective water management plans in place. Often, mining companies are required to treat wastewater to tertiary standards—more stringent standards than those required by many

municipalities. Such licences ensure legal accountability, promote compliance with regulations, and provide incentives for mining companies to develop their operations in a sustainable manner.

THE NEED FOR A NATIONAL WATER STRATEGY

As in other provinces, the discussion in Ontario revealed recognition among participants of the need for a national water strategy. Given the crucial importance of water to all aspects of life, it is essential that it become a national priority. The loss of stationarity being predicted as a result of a changing climate—already being experienced in Manitoba—is becoming increasingly incontestable. Unfortunately, the time frame of the changing climate does not generally coincide with decision-making processes. Considering the enormity of the issue, the absence of federal buy-in to a national water strategy would be costly for Canada. One answer may be to ensure that those individuals who can effectively explain, in plain language, the science behind the loss of stationarity and climate change are communicating their knowledge broadly, to help build public pressure on leaders to make better decisions on these critical issues.

“WHEN ONE-HALF OF ALL INSURANCE CLAIMS IN CANADA ARE FOR WATER-RELATED DAMAGES, IT BECOMES TOO COSTLY TO NOT THINK MORE STRATEGICALLY ABOUT WATER. IT IS ESSENTIAL THAT A WATER STRATEGY BECOME A NATIONAL PRIORITY.”

—BOB SANDFORD IN ONTARIO DURING FLOW’S 2011 NATIONAL DISCUSSION SERIES TOUR



Photo: Quozl

QUEBEC: WATER & THE POLITICAL GAME

THEMES RAISED BY THE PANELLISTS

THE INFRASTRUCTURE CHALLENGE

Discussions at the Quebec tour stops noted that Montreal’s water infrastructure is in an egregious state due to years of deferred maintenance and neglect, a situation described as the “water infrastructure deficit.” Aging infrastructure not only results in water loss, but also in energy loss. As well, the failure to adequately maintain urban water infrastructure results in increased operational costs for water and wastewater systems due to lost revenue from leaky distribution systems—known as “non-revenue water”—or the infiltration of stormwater into sewers.²³

Montreal’s water infrastructure problems can be viewed as a microcosm (though perhaps an extreme example) of the entire urban water infrastructure situation in Canada. From the Montreal example we can clearly see the extent to which water and energy are linked. As water distribution systems deteriorate due to lack of maintenance, more water must be pumped through the system to compensate for non-revenue water. More energy is needed to produce this increase in water,



Photo: Reduzzero

A wooden stormwater pipe, similar to systems still used in parts of older cities, particularly in eastern Canada, illustrates the often-outdated state of water and wastewater infrastructure in Canada.

MONTREAL MODERATOR

Nancy Goucher, FLOW Coordinator

MONTREAL PANELLISTS

Dr. Murray Clamen, FLOW Member; Adjunct Professor, McGill University; Former Secretary to the International Joint Commission

Francis Scarpaleggia, MP for Lac-Saint-Louis; Chair of the federal Liberal Water Caucus

QUEBEC CITY MODERATOR

Christian Simard, General Director, Nature Québec

QUEBEC CITY PANELLIST

Marc Hudon, FLOW Member; Senior Advisor to the St. Lawrence River-Great Lakes program at Nature Québec

resulting in increased expenditures by municipalities. This suggests that dedicated water conservation efforts can result in economic benefits to governments and the people they serve. Because the “myth of abundance” is entrenched in our thinking, Canadians have accepted and encouraged wasteful water use as a social norm. We have, at enormous public cost, overbuilt water infrastructure to support that wasteful norm. Now, we cannot afford to maintain and replace that infrastructure, a failure that increases the risk of public-health disasters.

We waste enormous amounts of energy treating and moving water. The cost of energy is rising and municipalities are realizing they cannot afford to spend up to 60 per cent of their energy budgets on moving water to where it is being used profligately.²⁴ In addition, this wasteful use of energy is accelerating climate change, which, in turn, is starting to damage the infrastructure that municipalities cannot afford to maintain and replace, via, for example, an increase in extreme weather events such as flooding and droughts. The impacts that extreme weather events are having on our cities have not gone unnoticed by the insurance industry. In November 2011, the Insurance Bureau of Canada announced that insurance rates would start to rise in areas that do not score well in terms of the age and state of their infrastructure, and in cases where infrastructure is inadequate or inadequately maintained insurance will no longer be available.²⁵

We have therefore unwittingly created a positive feedback loop that is simultaneously bankrupting us while compounding the effects of a changing climate. This cycle—overbuild, overuse, create greenhouse gas, increase demand, increase pressure to build—will continue to accelerate until we stop wasting water and the energy it takes to move it to where it is wasted. There is, however, a silver lining: every Canadian can share in the potential economic benefits of breaking this cycle. Industry example suggests that every dollar saved in water use can result in as much as four dollars in savings on chemical, electrical, and energy costs.²⁶ In terms of adaptation to climate impacts we can, in a sense, save ourselves by saving water. To do so, we have to advance water policy reform, provide better incentives and signals, and fundamentally address the issue of governance.

POLITICS OF WATER

The panellists acknowledged that water is largely a provincial concern, but that both federal and municipal levels have important roles to play. Establishing a “Secretary of State for Water” in Canada could address the fragmentation of water management at the federal level, ensure greater accountability in the management of water, and ensure that water has a voice at the highest political level.

Francis Scarpaleggia, MP for Lac-Saint-Louis and chair of the National Liberal Water Caucus, argued that the federal government must implement a new, comprehensive water policy to protect and nurture Canada’s water resources. Further, he discussed the need for “lightning rod” issues—engaging Canadians through single, more emotional issues, such as bulk water export, to lead them towards drawing their own conclusion that we need a comprehensive water strategy to address these issues in a strategic way.

In Quebec City, panellists discussed how the experience of the NWT regarding economic development along the Mackenzie Basin is similar to the ways in which management of the Great Lakes and the St. Lawrence River Basin evolved over the last century. In this example, economic development upstream had negative impacts on the water quality of communities downstream, which were often in different provinces (or states), raising issues concerning transboundary waters. For the Great Lakes, institutions like the International Joint Commission are critical to help deal with resolving transboundary water issues or preventing conflicts.

AUDIENCE DISCUSSION & RESPONSES

MINING IN NORTHERN QUEBEC

The audience expressed considerable concern about *Plan Nord*—a provincial plan to develop northern Quebec’s natural resources. Concern focused on the fragility of Northern ecosystems and whether proposed consultation with First Nations will be effective and adequate. The hydrology of the province is changing rapidly and, coupled with increasing natural gas development, there is a real risk of permanent damage to the fragile landscape. Participants felt that a comprehensive plan for protection of this landscape is absolutely critical.

Official statements indicate that 50 per cent of the *Plan Nord* territory will be protected by 2035,²⁷ yet some environmental groups contend that the plan is simply a boost for industrial and mining activity which, if poorly monitored, might lead to major water contamination issues. Given Quebec’s poor track record with water infrastructure, audience members felt that there is good reason to be concerned.

BULK WATER EXPORT

While not unique to Quebec, bulk water export (see Key Concept Box 7) was discussed at the Montreal and Quebec City sessions. Audience members were concerned that the United States might turn to Canada to solve its water supply problems through the bulk removal of freshwater resources via pipelines or ocean tankers. Support for the bulk export of water is often based on the myth of abundance. If this myth persists, policy decisions threaten to be ill-informed, with serious environmental, ecological, and political consequences.

“WE SPEND WAY TOO MUCH TIME IN THIS COUNTRY WORRYING ABOUT WATER EXPORTS AND NOT NEARLY ENOUGH TIME THINKING ABOUT HOW CHANGES THAT ARE OCCURRING WITHIN OUR HYDROLOGICAL REGIME SHOULD BE MANAGED AND GOVERNED.”

—BOB SANDFORD IN BC DURING FLOW’S 2011 NATIONAL DISCUSSION SERIES TOUR

KEY CONCEPT BOX 7 BULK WATER EXPORT

Increasing stress on global water supplies has sparked interest in Canada's seemingly abundant freshwater resources. This has led to a national debate about bulk water export in Canada, and galvanized unprecedented consensus amongst Canadians around the principle that fresh water is not like other commodities and should not be exported in bulk. According to a 2008 poll, 88 per cent of Canadians support a national water policy that bans the bulk export of fresh water. Although the debate about inter-basin transfers of Canadian water has existed in the public realm for decades, the launch of the North American Free Trade Agreement (NAFTA) in 1994 intensified this contentious national issue. Despite uncertainty about whether water is a tradable commodity under NAFTA, the free trade agreement unquestionably restricts Canada's ability to manage its fresh water. However, even with these constraints NAFTA does not entirely eliminate Canada's ability to ban or restrict water exports.

Arguments that we should ban the trade of Canadian water have focused on concerns about national control of water resources but also, importantly, the environmental implications, such as reduced flows and impacts on fish, wildlife, and ecosystems. In response, Canadians have initiated a number of efforts to ban bulk water export. For example, the majority of provinces have passed legislation, such as British Columbia's *Water Protection Act* and Quebec's *Water Resources Preservation Act*. However, this provincial patchwork approach may not be sufficient to ensure protection from bulk water export. The federal government has initiated various failed attempts to pass legislation, such as the recent Bill C-267, *An Act respecting the preservation of Canada's water resources*, which would have protected Canadian water from bulk water export (a different bill is now awaiting decision before the House of Commons). Until a clear and coordinated decision is made at the federal level, the issue of bulk water export will remain a contentious and pressing political issue, especially as global water scarcity mounts.

Sources on page 40

BRITISH COLUMBIA: A TIME FOR GOVERNANCE REFORM

THEMES RAISED BY THE PANELLISTS

WATER ACT MODERNIZATION

The panellists felt that, since British Columbia is currently engaged with the modernization of its *Water Act*, BC could learn a lot from the *NWT Water Stewardship Strategy*. Namely, that leadership is critical and a small number of individuals can make a difference in implementing substantial policy reform. A window of opportunity remains for input into BC's *Water Act* Modernization (WAM) process. There is still time to strengthen the proposed legislation with best practices learned from the NWT. This could include enabling shared collaborative governance or institutionalizing the public trust doctrine to protect public uses of and interests in fresh water in BC (see Key Concept Box 8).

KEY CONCEPT BOX 8 THE PUBLIC TRUST DOCTRINE

The concept of a “public trust” or an “environmental fiduciary duty” is based on public rights to certain natural resources that have a particularly public character and that the state protects for the benefit of the commons. The public trust doctrine (PTD) is firmly established as a common legal basis for environmental protection. It has evolved through both judicial decision and formal legislative action to protect water quality and quantity, ensure adequate water for the environment, and assist in managing water resources in the public interest. Water is a fundamental resource, and deserves special obligations on behalf of government to manage it for the benefit of all. Many of the key attributes of the public trust, such as clear public ownership of water, are already in place in Canada. The public trust should therefore not constitute a significant departure from existing policies and practices.

Sources on page 40

NELSON PANELLISTS

Gerry Nellestijn, Coordinator, Salmon Watershed Streamkeepers Society

Eileen Delehanty Pearkes, Author of “The Geography of Memory”

VANCOUVER MODERATOR

Deborah Harford, Executive Director, Adaptation to Climate Change Team (ACT), Simon Fraser University

VICTORIA MODERATOR

Dr. Rod Dobell, Professor Emeritus of Public Policy, University of Victoria

VICTORIA AND VANCOUVER PANELLISTS

Dr. Jon O’Riordan, Senior Policy Advisor, ACT; Strategic Adviser—Water Policy, POLIS Project on Ecological Governance; Former British Columbia Deputy Minister of Sustainable Resource Management

Oliver M. Brandes, FLOW Member; Water Project Leader and Co-Director of the POLIS Project on Ecological Governance, University of Victoria

SLOCAN VALLEY

There were no panellists at the Slocan Valley event since an open discussion format was employed.

It is clear that, similar to Canadians across the country, British Columbians care a lot about water. In a 2010 poll on BC attitudes towards fresh water, 98 per cent of respondents rated fresh water as critical to their well-being.²⁸ Yet, panellists commented on how BC residents are generally poorly informed about the Province’s water policies, as evidenced by the audience’s lack of awareness of the Province’s *Living Water Smart* plan. With WAM underway, it is essential that the public understand the importance of good governance in water management, and that lessons from the NWT could be used to help build a strong new *Water Sustainability Act* for BC (see Key Concept Box 9).

The process through which the *NWT Water Stewardship Strategy* was developed has value as a model for the modernization of BC’s *Water Act*, especially regarding the full engagement of First Nations in its reform. Panellists argued that principles similar to those that drove the *NWT Water Stewardship Strategy*—such as protecting ecological flows and engaging those affected in the decision-making process—should apply

to the process in BC, and that these same principles should inform public discourse over the potential reconsideration of the Columbia River Treaty in 2014.

KEY CONCEPT BOX 9

LIVING WATER SMART & BRITISH COLUMBIA'S WATER ACT MODERNIZATION

Living Water Smart is the Province of British Columbia's action plan for modernizing water management and water use in BC—essential steps for adapting to pressures on water resources from a changing climate, population growth, and economic development. Of the 46 commitments outlined in *Living Water Smart*, several focus on updating BC water law, stating, for example, that, “by 2012, water laws will improve the protection of ecological values, provide for more community involvement, and provide incentives to be water efficient; and legislation will recognize water flow requirements for ecosystems and species.”

Updating the Province's 100-year-old *Water Act* is a core component of *Living Water Smart*, and is key to achieving BC's vision for sustainable water stewardship. The *Water Act* Modernization (WAM) process aims to “create a simpler, more responsive legislative framework for the stewardship and management of the province's water resources.” The four primary goals of WAM are to:

- Protect stream health and aquatic environments;
- Improve water governance arrangements;
- Introduce more flexibility and efficiency in the water allocation system; and
- Regulate groundwater use in priority areas and for large withdrawals.

Source on page 40

GOVERNMENT TO GOVERNANCE

Panellists highlighted the fact that Canada's water has historically been governed by a top-down, state-driven regulatory approach. However, there has been a shift from “government” to “governance” in water resource management.²⁹ This is most evident in the *NWT Water Stewardship Strategy*, but also in the watershed management approach taken in Ontario, where, over time, increased responsibility has been delegated to

Conservation Authorities, which now have significantly more authority over water-use and management decisions in watersheds.

Other jurisdictions have shown a strong need for governance at the watershed scale, and an emphasis on collaboration. In the WAM process, the Government of British Columbia has the opportunity to build on these better practices and develop a comprehensive *Water Sustainability Act* that will be relevant now and into an increasingly uncertain future. Adherence to BC's existing vision for sustainable water stewardship, the *Living Water Smart* plan, will be critical for driving the development of this Act, including goals such as ensuring consideration of water for nature; protecting the water cycle (including groundwater regulation); embedding dispute resolution mechanisms; and providing for stakeholder input, as well as accountability and oversight mechanisms.

INTEGRATED RESOURCE RECOVERY

Integrated resource recovery (IRR) emphasizes the value of maintaining ecological function and using built infrastructure that is designed to meet nature's needs, as can be seen in visionary BC projects such as Southeast False Creek in Vancouver, and Dockside Green in Victoria. IRR was a hot topic at the BC tour stops. Panellist Jon O'Riordan illustrated the principles behind IRR, whereby “municipal infrastructure is developed in an integrated and holistic manner to maximize the recovery of ‘value’ from [solid and liquid] resource streams.”³⁰ Development of infrastructure mimics the closed-loop cycles present in all ecosystems and provides a local source of energy and water for the community, reducing the demand for new or external sources.³¹

A Metro Vancouver North Shore study of the potential benefits of IRR illustrated that revenue generation from energy and water recovery using this approach could amount to billions of dollars over the 60-year lifespan of infrastructure built to these standards.³² Further benefits for communities from IRR include reductions in greenhouse gas emissions (up to 25 per cent) and the potential to improve ecological health of wetlands and streams through the use of treated wastewater.³³ In a time of constrained public sector financing, it is now vitally important to change the business model for water and waste infrastructure from one of just minimizing costs to emphasizing maximizing revenues.

Southeast False Creek in Vancouver is a good example of how waste heat from sewage can supplement the

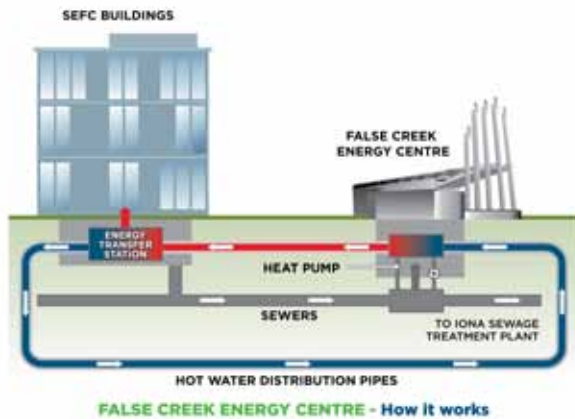


Photo: City of Vancouver

Integrated resource recovery methods have been incorporated into the design of Southeast False Creek buildings in Vancouver, BC.

district heating system. With IRR, water management becomes more than just the delivery of water. It requires us to rethink our connection with our local ecosystems and consider the environmental flows necessary to maintain and sustain nature, which in turn sustains society.

DEFINING A NEW WATER ETHIC

Developing a new “water ethic” for Canada involves recognizing nature’s need for water and the fact that we depend on nature for our survival. In acknowledging this relationship, the notion of “the greatest good to the greatest number” extends consideration to other species, not just humans. First Nations values, which already acknowledge this as a priority, can offer a useful benchmark for the creation of a Canadian water ethic, along with the notion that water is a human right and integral to human health. The role of political leadership in fostering ongoing support for water is critical if we are to succeed in realizing a new water ethic in Canada.

AUDIENCE DISCUSSION & RESPONSES

JURISDICTIONAL FRAGMENTATION

In BC, audience members questioned how Canada’s regional differences and jurisdictional fragmentation could allow for a comprehensive national water strategy. The size of Canada and the diverse cultural influences from coast to coast to coast may make a national water strategy hard to imagine. In addition, at the federal level, over 20 different agencies currently have formal jurisdiction over water resources. However,

much can be learned from the European Union’s *Water Framework Directive*, which was successfully designed and implemented despite the requirement to include the considerations of many people, languages, countries, and cultural differences (see Key Concept Box 10).

While different levels of government must always share responsibility for water management, the players involved need to find better ways to collaborate to protect water resources. This is where thinking of water governance as series of “nested systems” can be very helpful. Nested systems can be conceptualized as “multi-tiered governance structures” in which each level of governance has significant authority to address the issues it is most suited to handle at its scale of management, while ensuring that other levels of government—both above and below—are involved.³⁴ Aspects of this nested-system approach to water governance can be found in programs in the Chesapeake Bay and the Great Lakes region.³⁵ As well, the *NWT Water Stewardship Strategy* has the potential to further develop and apply this concept in the context of the North.

PUBLIC ENGAGEMENT

Federal support is almost certainly required for creating a national water strategy. However, there is still little public pressure to move in this direction. Panellist Oliver M. Brandes, Co-Director of the POLIS Project on Ecological Governance, highlighted the fact that politicians tend to take their cues from public pressure, so public education will play an important part in building momentum for a national water strategy. One opportunity to ensure that water is represented on the agenda of the federal government might be through the Council of the Federation’s (CoF) *Water Charter*, signed in 2010 (see Key Concept Box 10). The CoF is a body created by all the provinces and territories to provide a national voice on important issues that affect all Canadians, across provincial and territorial borders.

BULK WATER EXPORT

In BC, the issue of bulk water export was also a point of discussion (see Key Concept Box 7). The audience stressed that consultation with First Nations is essential to ensure their treaties and entitlements are not violated. Further, before water is exported to desert regions of the United States, states there must get their own “houses in order” through, for example, the maximization of conservation-based approaches and water soft path efforts to reduce water use and consumption, which entails fundamentally changing behaviour and attitudes towards this crucial resource.³⁶

KEY CONCEPT BOX 10

DEALING WITH WATER IN MULTI-JURISDICTIONAL CONTEXTS

THE EUROPEAN UNION'S WATER FRAMEWORK DIRECTIVE

Adopted in 2000, the European Union's *Water Framework Directive* (WFD) became one of the most comprehensive pieces of water legislation by legally requiring member states to “protect and restore the quality of waters across Europe” by 2015. The framework integrated all aspects of water management and shifted governance towards the river-basin scale. The framework accounts for groundwater and all surface water, including rivers, lakes, coastal waters, and “transitional waters” (e.g. estuaries that connect fresh and salt water). Though the regulations are not prescriptive and allow for flexibility in how member states implement the framework, enforcement mechanisms exist to ensure regulations are met. The WFD is built on four primary pillars:

- Coordinated action to achieve “good status” for all EU waters, including surface water and groundwater, by 2015;
- Establishment of a water-management system based on natural river basin districts, crossing regional and national boundaries;
- Integrated water management, bringing different water management issues into one framework; and
- Active involvement of interested parties and consultation with the public.

The most significant feature of the WFD as it relates to the Canadian situation is that an overarching governing body (the European Union) sets the standards, including preventing the deterioration of ecological quality and pollution of surface water and groundwater, enhancing and restoring polluted waters, and ensuring a balance between abstraction and recharge of groundwater. Individual jurisdictions (EU member states) are then held responsible for meeting the standards set out in the WFD. This approach provides a possible model for implementing a national water strategy in Canada, with the federal government as the overarching governing body, and individual provinces and territories tasked with the responsibility of meeting identified standards.

THE COUNCIL OF THE FEDERATION'S WATER CHARTER

In 2010, the premiers from every Canadian territory and province endorsed the Council of the Federation's *Water Charter*, which recognizes that all Canadians and their governments have a collective responsibility for water stewardship that ensures a sustainable water future. The *Water Charter* stipulates that:

- Water is a natural resource that is an essential component of all life on earth and there is no substitute for water.
- Adequate clean water is critical to human health, sanitation, and the liveability of communities across Canada.
- Water in its natural state is critical for supporting ecosystem health, maintaining fisheries, providing recreation, and attracting tourism.
- Climate change is already affecting this vital resource.
- Provinces and territories recognize that many watersheds do not follow national, provincial, and territorial boundaries.
- Provinces and territories recognize that we can improve our efforts by working in partnership and leveraging the successes in the management of water conservation and water quality protection in our individual jurisdictions.
- Working to achieve overarching water goals, such as reducing consumption and increasing efficiency, and protecting our water quality and adapting to the effects of a changing climate, can have both environmental and economic benefits, and is essential to a healthy, secure, and prosperous Canada.

Sources on page 40

HYDRO-CITIZENSHIP

Bob Sandford noted that, despite its lack of political parties, governance in the NWT might be considered even more complex than in other jurisdictions, due to the fact that it operates under a consensus-based system of government, and the role of Aboriginal Peoples is key to the decision-making process. All members of the legislative assembly are elected as independents in their constituencies, but must learn to work together in the context of broader territorial needs and priorities. Because water is such a unifying issue in the NWT, political leaders have been able to overcome ideological differences and make decisions that extend beyond short-term political gain. This is an excellent illustration of water having the power to connect Canadians, leading to what one of the panellists referred to as “hydro-citizenship” and its potential as a driver for a renaissance of democracy in its future management.

CHANGING OUR WATER-USE HABITS

Demand-side management, or conservation-based approaches, focus on making more efficient use of water supplies. This requires consideration of residential, industrial, and agricultural water consumption habits in addition to technical and management fixes. Addressing the way we use water within the context of Canadian lifestyle choices—which require an extraordinary amount of water—will increasingly become a financial, environmental, and ethical issue.

Water-scarce countries are those that do not have adequate water supplies to meet human needs. Water-stressed countries are those that face periodic water shortages. Globally, it has been projected that by 2025 the number of water-scarce countries could increase to 29, and the number of water-stressed countries could increase to 19. In 1995, these numbers were 18 and 11, respectively, illustrating the rapid onset of significant hydrological challenges worldwide.³⁷ The combined population of these 48 countries is estimated to be 2.9 billion—more than 40 per cent of the world population.³⁸ In addition, economic development is likely to fuel increased demands for water both directly, for example in the growth of water-consuming industries, and indirectly, for example in the form of dietary and other lifestyle changes that tend to be more water-consumptive as incomes increase.

“THE NORTHWEST TERRITORIES’ STRATEGY BENEFITTED FROM AND, IN FACT, COULD NOT HAVE SUCCEEDED WITHOUT ABORIGINAL INVOLVEMENT RIGHT FROM THE OUTSET.”

—BOB SANDFORD IN SASKATCHEWAN DURING FLOW’S 2011 NATIONAL DISCUSSION SERIES TOUR

ALBERTA: WHAT'S SO VALUABLE ABOUT A NATIONAL WATER STRATEGY?

Photo: L. Brandes

ROUNDTABLE DISCUSSION

THE NEED FOR A NATIONAL WATER STRATEGY

According to Roger Gibbins of the Canada West Foundation, broad federal frameworks are unpopular in Canada's current governmental structure. It will therefore likely prove a significant challenge to establish and implement a national water strategy driven by action at the federal level. Ideological resistance to such frameworks might help to explain the lack of federal buy-in to date in confronting water challenges in Canada. At the same time, there is a myriad of other groups making the case for federal strategies on a variety of issues, such as energy, Asia-Pacific trade, and pharmaceuticals. Bob Sandford noted that one of the challenges for civil society is to make water a policy priority for the Alberta government through voter pressure.

If we are to develop a national water strategy, the participants felt that it must address groundwater, surface water, and transboundary water resources. It should also ensure enforceable drinking water standards, and effective coordination between First Nations, local, provincial, and federal governments. A national water strategy is a critical step in safeguarding public health in an era of aging infrastructure, diminishing municipal budgets, and a rapidly changing climate. However, the participants were undecided as to whether the role of the federal government in water policy should be to enforce a gamut of standards or whether its role should be more symbolic or enabling in nature.

WHAT CAN ALBERTA DO TO IMPROVE THE SITUATION?

Alberta, with its vast tar sands operations, currently has the most vigorous economy in Canada. It is important that Alberta engage with the NWT (its downstream neighbour) on how best to manage water quality and quantity in the Mackenzie Basin. Another significant step that Alberta can take is the reform of its water allocation system—away from the First in Time, First in Right (FITFIR) model (a system of seniority that gives a senior licensee the right to use their full water allocation before a more junior licensee)—to one where

EDMONTON & CALGARY

In Edmonton and Calgary, there were no formal panellists. Instead, the event was based on a roundtable format. Bob Sandford presented and Dr. Roger Gibbins, President and CEO of Canada West Foundation, hosted a follow-up discussion with a group from industry, government, academia, and non-governmental organizations from across the province.³⁹

environmental flow considerations and fair sharing in times of water scarcity are a priority in the allocation scheme.

The Province of Alberta's water strategy, *Water for Life*, released in 2003 and renewed in 2008, must also be fully implemented, including restructuring the water governance regime in Alberta to move from the current entrenched, fragmented, and "siloes" approach to a watershed-based, integrated, and collaborative governance system—as originally envisioned in the strategy. Key actions are targeted for full implementation by 2019, such as designing and implementing regional drinking water and wastewater solutions, and updating water quality programs to support source protection



Photo: P. Williamson

Given Alberta's vigorous oil economy and subsequent environmental challenges, it is crucial that the Province engage with the NWT on how best to manage water quality and quantity in the shared Mackenzie Basin.

information and planning. Short- and medium-term targets include, respectively, developing future hydro-climate scenarios for major watersheds, and developing and implementing a viable governance system that supports sustainable management of water.

CULTURE OF WASTE

The group observed that awareness of the importance of water challenges is fairly low amongst the general population in Alberta, creating possible barriers to citizen engagement on these important issues. And, like much of the rest of Canada, the province has a well-established culture of water waste.

There is also a pronounced rural-urban divide in the province. The majority of the population lives in urban centres, yet most of the water issues in the province play out in the countryside. Making the case for water as a policy priority will be difficult unless politicians can get urban buy-in for water challenges that affect the rural parts of the province.

Despite considerable investment through its *Water for Life* strategy, Alberta faces a substantial financial challenge in the maintenance and repair of its existing municipal water distribution infrastructure, which is necessary to maintain public health and critical to reducing water loss across the system. This is also an important first step in reducing the amount of energy associated with municipal water systems. It is critical that leaders address the water-energy nexus and focus on the co-benefits of reductions in water and energy use.



Photo: elephotography

MOVING FORWARD IN SOUTHERN JURISDICTIONS

Like many jurisdictions in Canada, the Government of the Northwest Territories lacks capacity and capital (financial, human, and political), yet it explicitly prioritized the need to involve all stakeholders in the development and implementation of the *NWT Water Stewardship Strategy*, recognizing that, without consensus and partnership building, solutions would not be sustained over time. The NWT is unique in its approach to reforming water policy, and its methods are particularly instructive and valuable for provinces and territories seeking similar change in water governance. The *NWT Water Stewardship Strategy* offers a learning opportunity and compelling case for the rest of Canada to move forward on water policy reform.

In presenting the unique elements of the *NWT Water Stewardship Strategy* in cities across the country, FLOW's national discussion series tour succeeded in revealing the major concerns and ideas Canadians have regarding water in this country. The tour provided a forum for public discussion on important issues facing all Canadians, as well as specific regional challenges.

The tour was instrumental in collecting ideas, suggestions, and recommendations for next steps on what needs to happen to further engage Canadians in the protection of our water resources. For example, the need for more cross-jurisdictional learning to create opportunities for government, industry, decision-makers, non-governmental organizations, and academics to learn from the innovative approaches happening across Canada is an important first step. We need to find effective ways of sharing the best practices being developed in disparate regions of the country with the rest of Canada. We need to quickly adopt the approaches that are working—and learn from the approaches that are not.

Throughout the tour, Bob Sandford and the various panellists discussed water management and policy across Canada, and offered a number of ideas and thoughts on what could be improved. They also provided input on how water management could be reformed

at the federal level. The diversity of the issues and questions raised throughout the tour illustrates the complexity of the problems we face collectively as a country. It also shows that water challenges are not confined to specific geographical locations. Facing these challenges will require a fundamental shift in our relationship with water and the processes we use to make water-related decisions. This will require re-engineering our built systems and production processes to emphasize conservation and efficiency, and rethinking our rate of resource extraction to ensure the health and function of our watersheds—on which we all rely for our fresh water, as well as many other aspects of everyday well-being. It will require a cultural shift in our lifestyles and the development of proactive and practical policy tools. All of these measures would be furthered by a national water ethic that honours the values and needs of both humans and nature. Most importantly, facing our water challenges will require citizen engagement and urgent action at all levels of political leadership.

“PROSPEROUS COUNTRIES IN THE FUTURE WILL BE THOSE THAT HAVE ENOUGH WATER FOR FOOD, FOR CITIES, FOR INDUSTRY, AND FOR NATURE—AND KNOW HOW TO ENSURE THAT EACH GETS WHAT IT NEEDS.”

—BOB SANDFORD IN BC DURING FLOW'S 2011 NATIONAL DISCUSSION SERIES TOUR

CONCLUSION

Audience members and panellists who engaged with Bob Sandford during the tour indicated that they are cautiously optimistic about the future of water management in Canada. Positive and inspirational examples exist across the nation—in cities and towns, regionally, and at the level of senior government—that demonstrate pathways towards better governance and more sustainable use of water. Though this report primarily notes concerns with, and challenges of, current water management practices, there are many communities and organizations that are doing inspirational and progressive work. It is important that these practices are shared widely so we can all learn from them, to better improve the management of water in Canada. These positive examples should provide inspiration for change when progress appears impossible.

The intent of this report was not to come up with specific steps on how best to develop a national water strategy for Canada. Instead, through reporting back on what was heard across the country during FLOW's 2011 national discussion series tour, it is meant to act as a resource for those involved at all levels of decision-making on water and climate issues. Most importantly, this document highlights that the time has come for

a national water strategy in Canada that will address current and future impacts on our watersheds.

The groundbreaking *NWT Water Stewardship Strategy* offers a refreshing example of what is possible in terms of water policy reform in Canada. Leaders at the federal, provincial, territorial, regional, First Nations, and municipal levels; policy-makers and experts; water managers; and anyone with an interest in water management reform in Canada should be inspired by the principles embedded in the *Northern Voices, Northern Waters: NWT Water Stewardship Strategy*.

The FLOW national discussion series tour raised many critical issues pertaining to water management and policy in Canada, and how a changing climate is exacerbating these matters. It is now up to our leaders across the country, at all levels, to consider the messages, voices, and concerns embedded in this report, and to shift the narrative on Canada's most precious resource. Water must be put at the forefront of political and public interest. The future sustainability of fresh water in Canada demands a new national vision for understanding the value of our water and making the best use of it, now and in the future.



Photo: C. Vance

FINAL REFLECTIONS FROM BOB SANDFORD

Canadians across the country are passionate about the protection of water resources. They are willing to engage with the existing and emerging issues that have the potential to impact the quality and quantity of the water upon which local communities, businesses, and farmers depend. This section outlines five primary observations distilled from the discussions had with Canadians across the country regarding water policy reform in Canada.

THE APPROACH TO WATER MANAGEMENT IN THE NORTHWEST TERRITORIES IS A MODEL WORTH EXAMINING.

- The example set by the NWT provides important insights for water policy reform elsewhere in Canada.
- The *Northern Voices, Northern Waters: NWT Water Stewardship Strategy* is a remarkable achievement—from the way it was co-developed with communities and other stakeholders, to the principles upon which it is based.
- The NWT example illustrates that governments can be expected to do what they were created to do—exercise their fiduciary responsibility to protect the long-term interests of citizens.
- It is very clear from the NWT example that political leadership can make real change happen.

MANY JURISDICTIONS IN SOUTHERN CANADA ARE NOT CONSISTENTLY APPLYING THE FUNDAMENTAL PRINCIPLES OF SUSTAINABLE WATER MANAGEMENT.

- Many water scientists and advocates understand the basic steps required for the protection of water, but water providers—and indeed consumers—may be unwilling or uninterested in adopting such principles due

to emphasis on status quo approaches or reluctance to change.


- Broad stakeholder input and engagement is not only good practice, but also essential if water resources are to remain clean and sustain healthy ecosystems.
- Without consistent monitoring, baselines cannot be developed against which to measure change—you cannot manage what you do not measure. Achieving this will require ongoing investment from all levels of government.

CANADIANS, GENERALLY, BELIEVE THE “MYTH OF ABUNDANCE” ABOUT CANADA’S FRESH WATER.

- It is evident that Canadians still subscribe to a number of myths about the amount of water available in this country.
- Even though both surface water and groundwater contamination is widespread in every province, it is widely believed that our water is clean and there is little need for concern regarding pollution.
- Perhaps the most telling myth is the old engineering maxim that “the answer to pollution is dilution,” which posits that pollution does not pose a significant health risk to humans or the environment if sufficiently diluted by air or water.
- Both surface water and groundwater contamination must be addressed at the source, before contaminants enter the water cycle.

IT IS ESSENTIAL TO FOSTER GOVERNMENT LEADERSHIP AND CREDIBLE SCIENCE.

- Some believe that if efforts to address the effects of a changing climate do not make money, they are not worth pursuing, and that addressing impacts on our



hydrological cycle must be downloaded to the private sector or local governments.

- A vacuum in leadership can allow special interests to orchestrate influence that is not always in the broader public interest.
- The *NWT Water Stewardship Strategy* illustrates how governments can successfully work with a multitude of partners to put through comprehensive watershed management plans, based on credible climate science and TEK, as adaptive measures against the real and growing challenge of a changing climate.

THE CHALLENGE OF WATER POLICY REFORM REQUIRES CROSS-JURISDICTIONAL LEARNING.

- Every jurisdiction in Canada faces a number of common obstacles regarding water policy reform, and would benefit from increased expert interaction and improved knowledge about best practices from other jurisdictions, at home and abroad.

- Jurisdictions must not fall into the trap of comparing themselves to themselves. To be a leader in water conservation in Canada could mean reducing consumption to 300 litres per capita per day, down from the current use of approximately 329 litres per day.⁴⁰ However, compared to the average European consumption of 140 litres per capita per day, 300 litres per day still represents significant room for improvement.

- There are many positive examples in jurisdictions across Canada. The Council of the Federation is beginning to take water policy reform seriously and is showing collective national leadership—from the members' seats as provincial and territorial leaders—with an interest in and concern for water.

- Citizens are concerned and beginning to act by organizing themselves into regionally based and, in some cases, cross-jurisdictional water basin councils. These councils are appearing all over the country to take action in the context of the watersheds in which they exist.



Photo: C. Vance

APPENDIX A: NATIONAL TOUR MODERATORS & PANELLISTS

DATE (2011)	CITY	MODERATOR(S)	PANELLIST(S)
October 6th	Regina, SK	Dr. Dennis Fitzpatrick , University of Regina	Dr. David Sauchyn , Prairie Adaptation Research Collaborative; University of Regina
October 7th	Saskatoon, SK	Dr. Howard Wheeler , Global Institute for Water Security, University of Saskatchewan	Dr. Patricia Gober , Johnson-Shoyama Graduate School of Public Policy, University of Saskatchewan Dr. John Pomeroy , Centre for Hydrology, University of Saskatchewan
October 13th	Halifax, NS	Dr. William Lahey , Schulich School of Law, Dalhousie University	Open Discussion Format
October 14th	Sydney, NS	Bill Sluiman , Indigenous Cooperative on the Environment	Open Discussion Format
October 17th	Winnipeg, MB	Helen Fallding , Centre for Human Rights Research Initiative, University of Manitoba	Merrell-Ann Phare , FLOW; Centre for Indigenous Environmental Resources; Co-author of "Ethical Water: Learning to Value What Matters Most" Norm Brandson , FLOW; Water and Resource Policy Consultant Vicki Burns , Lake Winnipeg Project
October 24th	Toronto, ON	Lynn Patterson , RBC Blue Water Project	Tony Maas , FLOW; WWF-Canada Brenda Lucas , FLOW; RBC Blue Economy Initiative Dr. Rob de Loë , Department of Environment and Resource Studies, University of Waterloo
October 25th	Waterloo, ON	Dr. Richard Petrone , Cold Regions Research Centre, Wilfrid Laurier University Dr. Deborah MacLatchy , Faculty of Science, Wilfrid Laurier University	Dr. Chris Burn , Geography and Environmental Studies, Carleton University David Livingstone , Environmental Consultant with the Government of the Northwest Territories Stephen Kakfwi , Former Premier, Government of the Northwest Territories

DATE (2011)	CITY	MODERATOR(S)	PANELLIST(S)
October 26th	Montreal, QC	Nancy Goucher , FLOW	Dr. Murray Clamen , FLOW; Brace Institute, McGill University Francis Scarpaleggia , MP, Lac Saint-Louis
October 28th	Quebec City, QC	Christian Simard , Nature Québec	Marc Hudon , FLOW; St. Lawrence River-Great Lakes Program, Nature Québec
November 4th	Nelson, BC	No Moderator	Gerry Nellestijn , Salmon Watershed Streamkeepers Society Eileen Delehanty Pearkes , Author of "The Geography of Memory"
November 5th	Slocan Valley, BC	No Moderator	Open Discussion Format
November 8th	Vancouver, BC	Deborah Harford , Adaptation to Climate Change Team, Simon Fraser University	Oliver M. Brandes , FLOW; POLIS Project on Ecological Governance, University of Victoria Dr. Jon O’Riordan , Adaptation to Climate Change Team, Simon Fraser University; POLIS Project on Ecological Governance, University of Victoria; Former Deputy Minister, BC Ministry of Sustainable Resource Management
November 9th	Victoria, BC	Dr. Rod Dobell , Centre for Global Studies, University of Victoria	Oliver M. Brandes , FLOW; POLIS Project on Ecological Governance, University of Victoria Dr. Jon O’Riordan , Adaptation to Climate Change Team, Simon Fraser University; POLIS Project on Ecological Governance, University of Victoria; Former Deputy Minister, BC Ministry of Sustainable Resource Management
November 21st	Edmonton, AB	Dr. Roger Gibbins , Canada West Foundation	Roundtable Format
November 22nd	Calgary, AB	Dr. Roger Gibbins , Canada West Foundation	Roundtable Format

APPENDIX B: NATIONAL TOUR PARTNERS

Thank you to the following organizations for their support in hosting, promoting, and resourcing the 2011 National Discussion Series Tour “Northern Voices, Southern Choices: Water Policy Lessons for Canada.”



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POLIS Project
on
Ecological Governance
University of Victoria

Created in 2000, the POLIS Project on Ecological Governance is a research-based organization housed at the University of Victoria, British Columbia. Researchers who are also community activists work to make ecological thinking and practice a core value in all aspects of society and dismantle the notion that the environment is merely another sector. Among the many research centres investigating and promoting sustainability worldwide, POLIS represents a unique blend of multidisciplinary academic research and community action.

www.polisproject.org

POLIS Project on Ecological Governance

watersustainabilityproject

The POLIS Water Sustainability Project (WSP) is an action-based research group that recognizes water scarcity is a social dilemma that cannot be addressed by technical solutions alone. The project focuses on four themes crucial to a sustainable water future:

- Water Conservation and the Soft Path;
- The Water-Energy Nexus;
- Water Policy and Law Reform; and
- Watershed Governance.

The WSP works with industry, government, civil society, environmental not-for-profits, and individuals to develop and embed water conservation strategies that benefit the economy, communities, and the environment. The WSP is an initiative of the POLIS Project on Ecological Governance at the University of Victoria.

www.poliswaterproject.org



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