



FLOW MONITOR

CANADIAN WATER POLICY WATCH

Water in a New Era of Functional Federalism

It is our great pleasure to share this new edition of the FLOW Monitor – our publication that summarizes key activities, explores new and emerging ideas, and provides analysis and discussion on all things water policy in Canada.

Much has changed in Canada since our [last edition](#) – in particular, the election of a new federal government. Commitments to build a renewed, nation-to-nation relationship with Indigenous governments and honour the UN Declaration on Rights of Indigenous Peoples (UNDRIP); to review and modernize the environmental laws and policies rolled back by the previous federal government; and to invest in infrastructure to advance sustainability and build resilience in the face of climate change all hold significant potential for positive progress for waters in Canada. Further, these promises point to an eagerness to make the federation work in a better way.

This edition of the FLOW Monitor focuses on this new policy context. It includes articles on the modernization of the *Fisheries Act* and reviews of the *Canadian Environmental Protection Act* (CEPA) and the Federal Sustainable Development Strategy, plus a summary of FLOW's report on leveraging the government's \$180 billion infrastructure plan to advance urban water sustainability. The feature article focuses on the concept of collaborative consent – an emerging and

promising approach to creating a more equitable and just governance relationship between Canada and Indigenous peoples that is grounded in the process of reconciliation.

Cooperative federalism that is more inclusive of Indigenous and local governments is a crosscutting theme in this edition of the FLOW Monitor. At its heart, cooperative federalism is about (re)building relationships to develop collaborative solutions that meet the needs of the country while addressing unique cultural and regional interests, challenges and contexts. Developments like the [Pan-Canadian Framework on Clean Growth and Climate Change](#) and the recent Assembly of First Nations – [Canada Memorandum of Understanding on Joint Priorities](#) are indications that this government is thinking differently about the nature and function of the Canadian federation.

Yet many of Canada's most pressing water issues – from algal blooms plaguing Lake Winnipeg and Lake Erie to drinking water crises in too many First Nation communities to large scale flooding due to climate change – continue to persist. The role of water in broader issues of national concern, including natural resource development, economic growth in agriculture and our relations with the United States, is also increasingly prominent. All of this points to the need for a sustained focus on cooperative federalism and a deeper dialogue on making the Canadian federation work for water in the 21st century. You can expect more on this theme in future editions of the FLOW Monitor. **F**

TONY MAAS, DIRECTOR AND OLIVER BRANDES, CO-CHAIR

PHOTO: Todd Marsee, Michigan Sea Grant

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COLLABORATIVE CONSENT

Advancing a nation-to-nation relationship with Indigenous peoples in Canada

MERRELL-ANN PHARE, ROSIE SIMMS, OLIVER M. BRANDES, MICHAEL MILTENBERGER

In the wake of Canada's 150th birthday it is time to consider what is needed to make our federation work better. In an era of conflict around pipelines, new hydropower dams and developments of all sorts in traditional territories of Indigenous governments across the country, we are also poised for a new path forward with the [endorsement by the federal government](#) of United Nations Declaration on the Rights of Indigenous Peoples ([UNDRIP](#)). Implementation of UNDRIP is needed to create a more equitable and just governance relationship between Canada and Indigenous peoples. Trends in the Supreme Court from three important cases originating from British Columbia: Delgamuukw, Haida Nation, and Tsilhqot'in Nation only reinforce this, emphasizing that decision-making without the consent of Indigenous nations comes at a high cost and bears significant risks.

COLLABORATIVE CONSENT AS THE PATH FORWARD

Collaborative consent is a mutual consent process through which Indigenous and non-Indigenous governments commit to working together with a goal of achieving each other's consent to decisions, policies, and plans. It is about governance and changing how decisions are made. Collaborative consent is the missing link in confederation as it provides a way for Indigenous government to have seats at the table. This benefits all Canadians and all governments, at every level, and will be increasingly important as water issues become more complex as the climate changes.

Collaborative consent involves long-term processes requiring all governments to build structures and new institutions to engage and share decision-making. It does not require surrendering jurisdiction or authority; indeed, governments need to bring their authorities to the table and be prepared to implement them after consensus decisions are made.

This [visionary approach](#) has been applied in a number of instances in the Northwest Territories and was used by the NWT in the process of developing the Mackenzie River Basin [Bilateral Water Management Agreements](#) with Alberta and B.C. This experience from Canada's North demonstrates the proof of possibility – and it is now time for governments at all levels to embed this approach in all aspects of water management and governance.

GETTING PAST HISTORICAL BARRIERS TO A TRULY “COOPERATIVE” FEDERATION

As a concept, collaborative consent is distinct from section 35 requirements of the Canadian constitution related to consultation and accommodation of Indigenous peoples. The Supreme Court's interpretation of section 35 provides the framework that, through the avenue of consultation, legitimizes infringements of Indigenous rights. Collaborative consent offers a constructive way to build ongoing relationships among Crown and Indigenous governments, and can avoid rights infringements, litigation and social unrest.

Even with historical game stoppers, like unceded territory, and resolving land, title and rights claims that have been viewed as necessary precursors to any real governance conversation, issues can be addressed through collaborative consent because each party participates based on their own understanding of their authority, regardless of whether others agree. Collaborative consent offers a way to craft solutions that work for all parties through a truly cooperative form of federalism with out needing to resolve the difficult question of who “owns” the land and water.

Collaborative consent already forms the foundation of how Canada is governed, we just haven't called it that, and it hasn't yet involved Indigenous nations. Because our constitution is often unclear regarding areas of jurisdiction, we have a long history of federal, provincial, and territorial governments working together formally and informally at consensus-based governance tables on matters of shared importance and concern. We do this because it results in better – and lasting – decisions.

Intergovernmental relationships matter when governing in a federation: proceeding with a decision unilaterally and without consensus around the table risks significant harm to relationships with other governments.

A forthcoming discussion paper explores the opportunity of collaborative consent in the context of the new B.C. [Water Sustainability Act](#). The paper demonstrates the myriad ways – from water sustainability planning to embedding environmental flow considerations in water management to addressing land-water linkages – that better governance becomes possible with a foundation built on collaborative consent.*

HALLMARKS OF COLLABORATIVE CONSENT

The real world examples and the experience of the authors of this article reveal core hallmarks of collaborative consent, which include:

- Collaborative consent is fundamentally based on respect, trust, and the art of diplomacy between governments.
- Parties recognize each other as legitimate authorities (even if the scope of those authorities are being discussed in other venues).
- Parties engage at multiple sources and levels of governance.
- Parties commit to remaining at the table for the 'long haul'.
- Real outcomes are generated.

FROM CONCEPT TO ACTION

Collaborative consent requires transformation of existing governance systems and ways of thinking in the water context. Improved skills around collaboration and consensus building are also urgently needed to make this approach work in practice. Understanding, support, time, and resourcing are needed for Indigenous Nations' institution (re)building and internal governance processes to engage in ongoing collaborative consent processes. Most importantly, all political leaders must embrace the opportunity of finally honouring Canada's obligation that all levels of governments of the three founding nations that were here in the beginning – and are here to stay – are represented at the table of confederation. **F**

* Phare, M.A., Simms, R., Brandes, O.M. & Miltenberger, M. (2017 forthcoming). Collaborative Consent and BC's Water: Towards Watershed Co-Governance. POLIS Water Sustainability Project & Centre for Indigenous Environmental Resources. www.poliswaterproject.org.

Setting the course for Canada's next generation of urban water infrastructure

TONY MAAS, BRENDA LUCAS AND JIM BRUCE

The Government of Canada has committed to investing over [\\$180 billion in infrastructure](#) over the coming decade. This “infrastructure moment” presents an unparalleled opportunity to set the course for Canada's next generation of urban water infrastructure. And it comes at time when it is critically needed.

According to the [2016 Canadian Infrastructure Report Card](#), 29 percent of Canada's drinking water infrastructure and 35 percent of wastewater infrastructure is in fair to very poor condition. The backlog of repairs and upgrades to these critical community assets is estimated at \$88.5 billion. At the same time, climate change induced extreme events are happening across the country, with increasing frequency of floods, droughts, and freeze-thaw cycles adding to the pressure on community infrastructure.

In January 2017, [FLOW published a report](#) and [policy brief](#) that outlines three key strategies to advance urban water sustainably in Canada, demonstrates how these ideas are being put into action, and proposes policy recommendations for the federal government to advance their adoption. The report and brief build from a [roundtable](#) with the Minister of Infrastructure and Communities, hosted by the Southern Ontario Water Consortium (SOWC), the Water Technology Acceleration Project (WaterTAP) and the Ontario Clean Water Agency (OCWA) in June 2016.

THREE STRATEGIES TO ADVANCE URBAN WATER SUSTAINABILITY

Across Canada, communities are shifting the emphasis of water management from large-scale infrastructure expansion projects toward technologies and practices focused on increasing water efficiency, reducing carbon emissions, adapting to climate change and turning wastewater into a revenue stream.

THREE STRATEGIES LIE AT THE HEART OF THIS SHIFT IN APPROACH:

1. **Getting the most out of existing assets.** By combining performance-based asset management, comprehensive water efficiency programs, and optimization of wastewater facilities, communities can delay or even eliminate the need for costly infrastructure expansion while reducing energy

consumption and greenhouse gas emissions and saving money on operating costs.

2. **Building resilience and investing in living green infrastructure.** By slowing down runoff and absorbing or retaining pollutants, living green infrastructure buffers impacts of extreme precipitation events by mitigating damaging flood waters and reducing the amount of pollution reaching rivers and lakes. All infrastructure should be designed to meet future climatic conditions to 2050 or longer.
3. **Accelerating uptake of innovative technologies and practices.** World leaders in urban water sustainability are setting bold targets for nutrient recovery, water reuse, greenhouse gas reductions and net zero energy use. The federal government's historic infrastructure investments present an unprecedented opportunity to accelerate adoption of innovative water technologies and solutions, and to boost Canada's growing clean water sector.

SEIZING CANADA'S INFRASTRUCTURE MOMENT

With smart, strategic investments and well-designed regulations aligned around a vision of sustainability, resilience and innovation, the Government of Canada's infrastructure plan can address the backlog of repairs and upgrades to urban water systems, advance efforts to build smart and climate-ready communities, and position Canada as a leader in the \$500 billion global water technology and services market.

The following recommendations, drawn from FLOW's report, are aimed at aligning the fiscal policies that guide infrastructure investments and key federal regulations to advance urban water sustainability.

1. **Assess project proposals against criteria that prioritize and promote sustainability, resilience and innovation.** Project proposals should be screened to prioritize solutions that maximize the capacity of existing water and wastewater treatment facilities before investing in new, large-scale expansion

projects. As policy, the federal government should ensure that planned infrastructure can withstand extreme weather conditions by requiring that climate change resilience measures be incorporated into all infrastructure projects it supports.

- 2. Create dedicated funding streams to support municipalities in implementing urban water sustainability strategies.** Specific funding streams should be created to support sustainable solutions including water efficiency programs, optimization of wastewater facilities, living green infrastructure such as urban stream restoration and retention ponds, and technologies that generate energy and recover valuable resources such as nutrients from wastewater.
- 3. Modernize Wastewater Systems Effluent Regulations (WSER) and allow water and wastewater systems to sell carbon offset credits to drive sustainability and innovation.** Existing federal wastewater regulations should be updated to strengthen environmental performance, address new contaminants including pharmaceuticals and micro-plastics, and promote uptake of innovative Canadian technologies and practices. As outlined in a recent report by the Environmental Commissioner of Ontario, significant [opportunities exist to reduce greenhouse gas emissions related to water and wastewater](#) systems. The emerging federal carbon pricing regime should factor in the opportunity for these systems to provide carbon offset credits.

The future of water infrastructure clearly matters to Canadians. [RBC's 2016 Water Attitudes Survey](#) found that after health care, people feel water services should be the next top priority for government infrastructure funding. If implemented in a coordinated manner, the strategies and policy recommendations outlined by FLOW can ensure that federal infrastructure investments make the most of public dollars by advancing sustainability, building resilience, and driving innovation in urban water management. **F**

Books and reports by FLOW and member organizations

In each edition of the FLOW Monitor we profile some of the work of the Forum for Leadership on Water's membership. This edition features three reports dealing with regional and national water policy and governance, as well as three recent books authored by FLOW members.

TRANSCENDING BOUNDARIES

**FLOW and the Gordon Foundation
November 2016**

Transcending Boundaries: A Guidebook to the Alberta-Northwest Territories Mackenzie Basin River Bilateral Water Management Agreement is a detailed examination of one of the most comprehensive and progressive transboundary water agreements in the world. Through the Bilateral Agreement between Alberta and the Northwest Territories, signed on March 18, 2015, the two governments commit to cooperative, integrated watershed management in the Mackenzie River Basin – one of the most intact large-scale ecosystems in North America. Transcending Boundaries is a tool for citizens to take action and make their voices heard in advancing the implementation of this unique and historic agreement. Download the guidebook at: flowcanada.org/our-work.

REPORT TO THE NATIONAL ENERGY BOARD MODERNIZATION PANEL Centre for Indigenous Environmental Resources (CIER) April 2017

Authors Merrell-Ann Phare and Michael Miltenberger hold that many of the challenges being faced in relation to proposed projects subject to National Energy Board (NEB) processes and consultation result from a failure to build appropriate governance mechanisms that include Indigenous governments in discharging political commitments, policy and program development, and other obligations. This report, as a secondary focus, comments on some key inadequacies in the NEB Crown consultation process. It also provides, as answers to questions articulated in the relevant NEB Modernization Process Discussion Papers, recommendations about how to improve Indigenous-specific elements of the NEB itself. Read the discussion paper at: yourcier.org.

A BLUEPRINT FOR WATERSHED GOVERNANCE IN BRITISH COLUMBIA POLIS Water Sustainability Project January 2014

This report from the team at the POLIS Project on Ecological Governance focuses on water governance in British Columbia and offers a path forward for how the Province could transform its current approaches to decision-making to ensure a more sustainable and resilient future as it implements its recent *Water Sustainability Act* (2016). The report sets out a strategic 10-year program and proposes nine winning conditions to ensure success. Recognizing the unique institutional, legal, cultural, and geographic challenges of the province, this Blueprint outlines a timeline and clear milestones for moving towards watershed governance in B.C. Access the Blueprint at: poliswaterproject.org.

Book profiles can be found on page 12.



HABITAT 2.0:

Toward a modern Fisheries Act

LINDA NOWLAN AND TONY MAAS

“No habitat, no fish” has been a common refrain among fisheries managers and advocates for decades. The idea that sustaining healthy fisheries requires protection of fish habitat was first introduced into the *Fisheries Act* in 1977. In 2012, the government of the day’s omnibus budget legislation, Bills [C-38](#) and [C-45](#), unraveled many of the key connections in Canada’s environmental safety net, leaving only frayed threads in place for protecting fish and fish habitat.

Among the most significant changes introduced in 2012 was the replacement of the well-established “HADD” provision, which prohibited the “harmful alteration or disruption, or the destruction, of fish habitat,” with the widely contested and vague concept of [serious harm](#) to fish. This fundamental change to the legislation proved difficult for fisheries managers who had long relied on a body of scientific evidence and legal precedent for interpreting the HADD prohibition. This and other changes to the Act also posed challenges for project proponents whose applications for approval were impacted as DFO staff worked to establish policy to make decisions based on new concepts such as serious harm.

Fortunately for fish – and for the people that depend on them for livelihoods, recreation, subsistence and culture – the current Prime Minister [tasked the Fisheries Minister](#) with reviewing the previous government’s changes to the *Fisheries Act* in order to “restore lost protections, and incorporate modern safeguards.” In the fall of 2016, the government initiated action by requesting that the House of Commons Standing Committee on Fisheries and Oceans (FOPO) hold [formal hearings](#) to review



changes made to the *Fisheries Act* in 2012, and by creating an [online consultation portal](#) where stakeholders and the public were able to share ideas and input.

Fish, fish habitat, and fresh water clearly matter to Canadians. Hundreds of people took the time to offer comments on the government's online consultation portal, and the Standing Committee was inundated with input, hearing from 50 witnesses and receiving 188 briefs from a wide range of organizations and interests over the course of its review. FLOW and the West Coast Environmental Law Association (WCEL) partnered on a submission titled [Habitat 2.0 – A new approach to Canada's Fisheries Act](#), which Linda Nowlan, Staff Counsel at WCEL and FLOW member, [presented in person](#) before the Standing Committee. The brief included a suite of recommendations to restore and modernize the *Fisheries Act* to better protect and restore fish habitat.

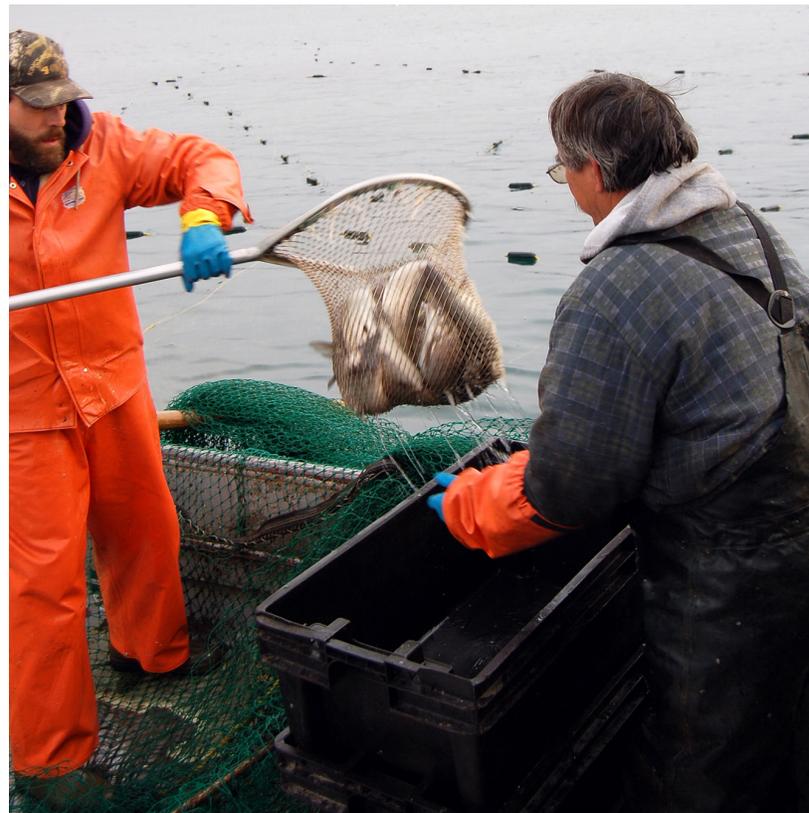
The Committee's [report](#), tabled in Parliament in late February 2017, referenced many of the proposals put forward by FLOW and WCEL among its 32 recommendations. The Committee's top recommendation was to remove reference to the concept of "serious harm" from the legislation and to reinstate the HADD prohibition as the foundation of the Act's habitat protection provisions. But as per the Minister's mandate, the government's review of the *Fisheries Act* is intended to go beyond restoring what was lost in 2012. To that end, we were encouraged to see reference to modern concepts for fisheries management in the Committee's report, including adoption of an ecosystem approach and sustainability principles, assessing and addressing the cumulative effects of multiple activities, protection of [environmental flows](#), and provisions for fish passage around barriers such as dams and weirs.

As required under the rules of Parliament, the [government responded](#) to the Committee's report within 120 days of it being tabled in the House. The response supports many of the recommendations put forward by the Committee, and lays out four broad themes under which DFO will seek to improve habitat protection activities: 1) Planning and Integrated Management; 2) Regulatory and Enforcement

Activities; 3) Partnering and Collaboration; and, 4) Monitoring and Reporting Back to Canadians. These themes, which are reinforced in the government's recent [discussion paper on environmental reviews](#), are expected to form the basis for a second phase of consultation on *Fisheries Act* reform over the summer of 2017. In anticipation of these next steps, FLOW has been part of a growing and diverse group of organizations working together to advance a [common set of priorities](#) for a new *Fisheries Act*.

The government's commitment to renewing the *Fisheries Act* is an unprecedented opportunity to put in place a modern legal and policy framework to protect, restore and sustain healthy fisheries, waters and economies for generations to come. FLOW will be tracking the process of legislative reform closely over the coming months to identify opportunities to ensure a modern *Fisheries Act* – and the resources and capacity to implement it – are in place as critical elements of a strong environmental safety net for Canada. **F**

PHOTO Andrew Muir



Canadian Environmental Protection Act:

CHEMICALS MANAGEMENT FOR A CLEAN WATER FUTURE



RALPH PENTLAND AND TONY MAAS

The Canadian Environmental Protection Act, 1999 ([CEPA, 1999](#)) governs the assessment and management of risks to human and environmental health posed by chemical substances. The legislation includes a requirement for parliamentary review of the administration of the Act every five years. In March of 2016, Parliament passed a motion designating the Standing Committee on Environment and Sustainable Development to undertake the [required review](#) - a process that has generated enormous interest with 68 submissions received and 56 witnesses heard by the Committee over the fall and winter of 2016. FLOW took the opportunity presented by the review to share our perspective on the chemicals management provisions of the Act with a [formal submission](#) to the Committee.

PHOTO Przemysław Sakrajda on Unsplash

The 1988 *Canadian Environmental Protection Act* created a legal foundation for regulating potentially hazardous “discrete chemical compounds, classes of chemicals, emissions and effluents, and products of biotechnology, including microorganisms.” There are some 80,000 to 100,000 distinct chemical substances in commercial use in North America today. At least some of these chemicals are not breaking down as quickly as they are added to the environment, leading to the inevitable conclusion that animals and humans are likely ingesting ever-stronger solutions of unpredictably active chemicals.

A significant number of those chemicals are so-called endocrine disruptors (EDCs). It is quite plausible to assume that those EDCs may produce significant disruptions in normal bodily functions or development, even in low doses of exposure. It is known that EDCs are widely dispersed in the environment, often at levels plausibly associated with biological effects, and that fish, wildlife and human exposure is widespread.

It is difficult – and in many cases impossible – to definitively prove a direct cause and effect relationship between a specific chemical and a specific health impact. And what becomes of thousands of synthetic chemicals as they mingle and at times combine in the aquatic environment is largely unknown. Nevertheless, the weight of empirical and early scientific evidence points to some very disturbing trends in human and environmental health, and the risks associated with environmental contaminants are quickly becoming a matter of urgent national concern that will require fundamental legal reforms, and changes to policies and programs for chemicals management in Canada.

To effectively deal with the risks posed by harmful chemicals, the fundamentals of CEPA will need to evolve from the current “one chemical at a time”, “innocent until proven guilty”, and “onus on government” approach to one that reverses onus by requiring that industry demonstrate the safety of the substances they produce and take action to develop alternatives that are safer for humans and the environment. Key deficiencies in chemicals management programming in Canada will also need to be addressed. These include: the glacial pace at which “chemicals of concern” are assessed, which leaves Canadians exposed to potentially dangerous contaminants much longer than necessary; a lack of

sufficient toxicity data for most chemicals on the market; failure to assess the cumulative effects on people and other species of the many chemicals discharged to, and persisting in, the environment; poorly written regulations; and, lax enforcement.

Canada should look to experience in other parts of the world, especially to Europe, for direction on such fundamental change. Established in 2007, Europe’s [REACH](#) (Registration, Evaluation, Authorization and Restriction of Chemicals) system requires any company in the EU that manufactures or imports more than 1 metric tonne of a chemical to register it with ECHA ([The European Chemicals Agency](#)) along with details about its properties, uses and safe-handling practices. If the compound is even suspected of posing a risk to human or environmental health, ECHA may demand additional testing, and if it is subsequently determined to pose a serious and irreversible risk, it cannot be used without official authorization. Before such authorization may be granted, the industry must analyse the availability of alternatives and the feasibility of substitution.

In June 2017, the Standing Committee released its [report on the review of CEPA](#). While the Committee did not go so far as to recommend moving all the way to a REACH-like (European) approach for dealing with toxics, they did make a number of recommendations that move in that general direction. These include: adding endocrine disruptors to the definition of toxics; adopting a reverse-onus approach for a sub-set of chemicals that are of very high concern; considering cumulative and synergistic effects of multiple chemicals; and, requiring mandatory assessment or reassessment of a substance if another OECD country has placed new restrictions on it. FLOW supports these recommendations and we look forward to continued engagement on efforts to reduce the risks to Canadians, our waters and our environment posed by chemical substances. **F**

Canada's Federal Sustainable Development Strategy:

FOCUSING ON FRESHWATER PROTECTION

TONY MAAS AND RALPH PENTLAND

The *Federal Sustainable Development Act, 2008* requires that the Minister of Environment and Climate Change consult on and table a “whole-of-government” Federal Sustainable Development Strategy (FSDS) every three years. [Achieving a Sustainable Future](#), which covers the period from 2016-2019, is Canada’s most recent iteration of the FSDS. In June of 2016, FLOW took the opportunity to offer [comments on the draft strategy](#) as part of the government’s consultation process.

Tabled in Parliament in October 2016, the final FSDS is a comprehensive document that reflects the mandate letters issued by the Prime Minister to his Cabinet and thus the government’s policy agenda. Efforts to align the federal strategy with the [Sustainable Development Goals](#) of the United Nations’ 2030 Agenda sends a signal that Canada has ambitions to once again play a role in advancing sustainable development globally. FLOW was pleased to be recognized as a “Partner in Action” in the 2016-2019 strategy.

FLOW’s comments on the draft FSDS focused around 12 opportunities that we believed would greatly strengthen the final strategy.

1. LEGAL AND INSTITUTIONAL OPPORTUNITIES

Opportunity #1: Strengthening the *Federal Sustainable Development Act*. Many industrialized countries have legislation similar to Canada’s, but that include more action-oriented and inspirational goals, a broader



Thanks to our partners and supporters

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set of sustainability principles, and creative institutional initiatives such as appointing an advocate for future generations or a Parliamentary Committee for the future.

Opportunity #2: Repairing federal environmental legislation. Review of the FSDS at a time when the federal government is also reviewing key environmental laws, including the *Fisheries, Navigation Protection, National Energy Board and Canadian Environmental Assessment Acts*, presents a unique opportunity to align the FSDS and these important pieces of legislation around common sustainability principles.

Opportunity #3: Implementing nation-to-nation relationships with Indigenous peoples. The federal government is committed to establishing a new nation-to-nation relationship with Indigenous governments and peoples. One such opportunity – the concept of collaborative consent – is explored in more detail in a separate article in this newsletter.

Opportunity #4: Strengthening federal water institutions. While most water management takes place from the bottom up, these efforts would be greatly enhanced by capacity and coordination at the federal level through the creation of a Canada Water Agency, a Ministry of State for Water or some equivalent institution.

2. WATER MANAGEMENT OPPORTUNITIES

Opportunity #5: Advancing freshwater strategies. Nearly every province and territory has introduced water strategies of some sort over the past decade. The federal government should play an active role in advancing these strategies considering that many water outcomes depend, to a large extent, on decisions made by the federal government.

Opportunity #6: Upgrading boundary waters management. The federal government's role in protecting Canadian interests in shared Canada – U.S. waters has waned significantly in recent years. Areas requiring more attention, including binational fact-finding modeled on the successful procedures developed by the International Joint Commission, include algal blooms in Lake Winnipeg and renegotiation of the Columbia River Treaty.

Opportunity #7: Making the federation work for water. Issues such as climate change and more dangerous environmental pollutants suggest a growing need for federal, provincial and territorial governments, and

indeed Indigenous and local governments, to work even more closely together toward shared policy goals and coordinated action.

Opportunity #8: Sustainable infrastructure and clean technology. The federal government's decade-long infrastructure investment plan presents an opportunity for Canada to join leading countries that are setting expectations for low impact development, water efficiency and reuse, net zero energy use, and resource recovery. These matters are discussed in more detail in the article titled *Setting the course for Canada's next generation of urban water infrastructure* in this newsletter.

3. POLICY RESEARCH OPPORTUNITIES

Opportunity #9: Chemicals management research. Current Canadian chemicals management policies are unlikely to be adequate to deal with emerging issues. This matter is addressed in greater detail in an article on the federal government's review of the *Canadian Environmental Protection Act* in this newsletter.

Opportunity #10: Flood damage reduction research. Flood damages are rapidly escalating with climate change. While increased federal investments in this area are important, federal flood policies, which are basically free governmental flood insurance, are not keeping up with the scale of the challenge.

Opportunity #11: Research on well-designed regulation. With the exception of carbon taxes, Canada relies almost exclusively on technology-based environmental regulation. Research in the U.S. and elsewhere has demonstrated that a mix of technology-based, performance-based and incentive-based regulation holds enormous potential for environmental and economic progress.

Opportunity # 12: Research related to environmental rights. Many countries have enshrined a "right to the environment" in their constitutions. The federal government should undertake research on this and related topics such as public trust law given that Canadian citizens are beginning to expect a more binding contract with their governments to preserve the life-sustaining attributes of water, air and oceans. **F**



AQUA HACKING - UNITED FOR LAKE ERIE

FLOW is pleased to be a partner in **AquaHacking 2017** - United for Lake Erie. Spearheaded by the de Gaspé Beaubien Foundation, AquaHacking is a multi-generational, multi-sectoral movement that mobilizes teams of water experts, hackers, engineers and other creative minds to develop functional, marketable innovations to solve real world water issues. Following two successful events focused on the Ottawa River in 2015 and the St. Lawrence River in 2016, the de Gaspé Beaubien Foundation chose to bring AquaHacking to Lake Erie. AquaHacking 2017 culminates in a Summit where five finalist teams will pitch their solutions to a panel of expert judges with the hope of landing the top prize of \$25,000 and access to support to help bring their solutions to market. This year's AquaHacking Summit, which will bring together water experts and advocates, political leaders, the private sector and exciting keynote speakers, will take place on September 13 in Waterloo Region in conjunction with Elsevier's Water Research Conference on The Role of Water Technology Innovation in the Blue Economy. **For more information visit: aquahacking.com**

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Books by FLOW Members

A CANADIAN ENVIRONMENTAL CHRONICLE (1954-2015)

James P. Bruce

Canadian Water Resources Association (CWRA)

This book chronicles the author's 60-plus years advancing environmental science and policy in the service of the people of Canada. In a career that spans early days as a weather forecaster to various Assistant Deputy Minister postings with the Government of Canada to Acting Deputy Secretary of the World Meteorological Association, Jim Bruce has played a leading role in tackling some of Canada's, North America's, and the world's most pressing environmental challenges including acid rain, ozone depletion, water management, and climate change. The book is available for purchase through the CWRA Bookstore.

"This is a book that, by showing how it was done, can recharge Canada's environmental scientists and managers to refresh their pursuit of a sustainable planet. Jim Bruce inspires the next generation of environmental scientists to also rise to the challenges of their time." - John Pomeroy, Ph.D.

DOWN THE DRAIN: HOW WE ARE FAILING TO PROTECT OUR WATER RESOURCES

Ralph Pentland and Chris Wood

Greystone Books

In this authoritative review of decades of independent critiques, accompanied by many real-world stories of water management failures, award-winning journalist

Chris Wood and Canadian water policy expert Ralph Pentland explore how governments have failed to protect the waters that we drink, fish from and swim in, and that support every aspect of our national economy. The authors review the history of water management in Canada and compare recent approaches in Canada, the United States, and Europe, proposing measures to improve our performance, including a new charter that would hold governments to account for decisions that impact water in Canada.

NORTH AMERICA IN THE ANTHROPOCENE

Robert William Sandford

Rocky Mountain Books

North America in the Anthropocene maintains that human beings have entered a new historical epoch - the Anthropocene - in which our own economic activity has reached such planetary scale and power that we can no longer count on Earth's natural systems and functions to absorb negative human impacts on landscape and biodiversity. Sandford attempts to address the question of why, when we clearly know the enormous risks we face, we are still not doing what is necessary to prevent climate disaster. The central tenet of this book is that what we as a society are facing is nothing less than a struggle to redefine our entire dominant mythology. If we want to survive and prosper in the Anthropocene, we will have to invent - and continuously reinvent - a new human mythos. Given the enormous challenges we face, creating that new mythos should be our society's most urgent common enterprise.

