

# Water Security for Canadians

## Solutions for Canada's Emerging Water Crisis





## AUTHORS

**Global Water Futures:** GWF is the largest university-led research program in the world and is a partnership between University of Saskatchewan, University of Waterloo, Wilfrid Laurier University and McMaster University. The leading-edge scientific program is delivering risk management solutions to manage water futures in Canada and other cold regions where global warming is changing landscapes, ecosystems, and the water environment.

John Pomeroy, Stephanie Merrill,  
Chris DeBeer, Phani Adapa  
Contact: gwf.usask.ca;  
gwf.project@usask.ca

### **Centre for Indigenous Environmental**

**Resources:** CIER is Canada's first and only Indigenous-directed environmental non-profit charitable organization. We use and value traditional, local, and Western science methods, and work across political boundaries and cross-cultural settings on environmental issues, recognizing and respecting Indigenous rights. CIER focuses on meeting Indigenous nations' needs, as they define them to support and build sustainable Indigenous communities and protect lands and waters.

Merrell-Ann Phare, Natasha Overduin,  
Michael Miltenberger  
Contact: yourcier.org;  
NOverduin@yourcier.org

**Forum for Leadership on Water:** FLOW is an independent, non-partisan group of policy experts from across Canada, including past political leaders, former officials with federal and provincial governments, and senior staff of respected research institutes and non-governmental organizations. FLOW supports efforts to secure the health of Canada's fresh water by providing ongoing, independent expert analysis and perspectives on water policy in Canada.

Tony Maas, Ralph Pentland  
Contact: flowcanada.org;  
tony@flowcanada.org

**POLIS Water Sustainability Project, Centre for Global Studies, University of Victoria:** POLIS is a University based "think tank" focused on law and institution research, reform and action. Achieving water sustainability requires innovative law, policy, and governance solutions and we develop cutting-edge research to improve fresh water decision-making and management. By combining practical expert research with community action and deep partnerships, our team works to increase understanding of fresh water issues and to drive law, policy, and governance reform to generate change towards a sustainable fresh water future.

Oliver M. Brandes  
Contact: poliswaterproject.org;  
omb@uvic.ca

**United Nations University Institute for Water, Environment and Health:** UNU-INWEH responds directly to the regional and global water crisis and facilitates efforts to meet UN Sustainable Development Goals by providing a scientific evidence base. UNU-INWEH carries out its work in cooperation with other research institutions, international organizations, individual scholars, and scientists throughout the world.

Robert William Sandford  
Contact: inweh.unu.edu;  
robert.w.sandford@gmail.com

The Canadian Water Security Initiative is a collaboration of scientists and policy experts who have come together to analyze Canada's emerging water crisis, and to chart a path forward to ensure water security for all Canadians. Drawing together a wide range of experience from across the country, the initiative leverages world class science and policy expertise to propose solutions that strengthen cooperative federalism in the context of water governance and management, with specific attention to enhancing the role of the federal government.

## CONTENTS

EXECUTIVE SUMMARY.....	4
THE NEED AND THE OPPORTUNITY FOR WATER SOLUTIONS .....	6
BEHIND THE CRISIS: MISSING COMMITMENTS, AUTHORITIES, CAPACITIES FOR ACTION	
CANADA'S EMERGING WATER CRISIS .....	8
PAN-CANADIAN MAP OF CANADA'S EMERGING WATER CRISIS.....	10
SOLUTIONS FOR WATER SECURITY.....	12
INSTITUTIONS TO OVERSEE AND DELIVER WATER SOLUTIONS.....	14
PARTNERING WITH INDIGENOUS NATIONS IN DESIGNING, DRAFTING, AND	
IMPLEMENTING A MODERNIZED <i>CANADA WATER ACT</i> .....	17
IN CONCLUSION.....	19



## EXECUTIVE SUMMARY

This concept note outlines how the federal government can provide leadership and better exercise its jurisdiction to help prevent Canada's emerging water crisis. It proposes a number of specific and achievable activities that will position Canada as a global leader in water prediction, management and sustainability.

Modernizing the *Canada Water Act* (1970) – the federal government's primary fresh water legislation – is critical to a comprehensive approach. A modernized *Canada Water Act* will support the creation of a *Canada Water Security Centre* and a *National Water Security Commission*; support implementation of Indigenous inherent, Aboriginal and treaty water rights and roles in water governance and management; and, catalyze increased funding and capacity for fresh water monitoring, prediction, planning and effective management.

### The Emerging Water Crisis

Canadians can no longer be assured our waters are abundant, safe and secure. As global temperatures continue to increase, glaciers melt, permafrost thaws, river flows become unpredictable and lakes warm and fill with toxic algae. Science is telling us that the rate at which water moves through the water cycle is accelerating, which is fundamentally changing weather and precipitation patterns. Evidence of such change in Canada is mounting, with more frequent and extreme floods, droughts, and fires. A changing climate and a disrupted hydrologic cycle also amplifies the negative effects of development and pollution on watersheds and is damaging aquatic life in our waterways from coast to coast to coast.

The impacts of these rapid changes in water availability and quality are costly. The implications include undermining the health and function of world-class parks and protected areas, traditional subsistence ways of life, built infrastructure and food and energy production. Concern and conflicts over water are central in the public's resistance and lack of trust around resource developments, with significant economic and social consequences.

Meanwhile, the cost of floods and droughts for families, towns and cities, the insurance sector, businesses, and ultimately the federal government, are skyrocketing and unsustainable.

### The Path to Solutions

Most water management decisions are made locally, through provincial and Indigenous jurisdictions. Yet the majority of our major river and lake basins are transboundary, involving multiple provinces, Indigenous communities and sometimes the United States in basin management. A balanced way to strengthen the health and protect the ecosystem services of these shared waters is through a more integrated approach to planning at the river basin level. This approach requires all of these orders of government to work together. Importantly, because these waters cut across jurisdictional boundaries, rights and responsibilities, this approach requires a meaningful federal role, particularly in four key areas:

1. **Creating and mobilizing the knowledge needed to predict and respond to water problems** – by providing centralized and harmonized collection and dissemination of water information; water predictions including flood and drought forecasting; and decision-support services through a *Canada Water Security Centre*.
2. **Strengthening transboundary water management and cooperative federalism** – by prioritizing healthy and intact river basins, as well as capacity and commitment to anticipate, investigate, avoid and resolve disputes through a *National Water Commission*. The Commission would also guide water management and water-related climate adaptation strategies through the 21st century. This effort to strengthen management and cooperative federalism would include focused efforts to understand and make recommendations regarding evolving public opinion and

best international practices, including fiduciary duty and public trust concepts articulated in a modernized law.

3. **Strengthening reconciliation with Indigenous peoples** – by ensuring the *Canada Water Act* is consistent with the United Nations Declaration on the Rights of Indigenous Peoples' and adopting a consent-based, co-drafting approach to renewing the *Canada Water Act* in partnership with Indigenous governments. This includes reaching agreement on the policy objectives and goals of the Act, and how these support Indigenous peoples' goals and rights to self-determination, and implementation of Indigenous inherent, Aboriginal and treaty water rights and roles in water governance and management.

4. **Improving collaborative river basin planning** – by building durable partnerships for water management and decision making with provinces, territories and Indigenous governments with a clear outcome of building resilience to extreme events, identifying priority areas for watershed restoration, and ensuring effective environmental flow regimes are in place across all levels of jurisdiction and authority.

Enabling these specific water solutions can save Canada billions of dollars by preventing damage to infrastructure and ecosystems and reducing disaster payments. The federal government can carefully target existing expenditures and realize new efficiencies between federal departments with water portfolios to financially support changes to a modernized *Canada Water Act*.





## THE NEED AND THE OPPORTUNITY FOR WATER SOLUTIONS

Water is our most precious resource – it is a foundation for healthy communities, economies and ecosystems. But, across the country, water problems are on a rapid rise. Pollution and development pressures from decades of hydropower, mining, forestry, urbanization, irrigation and other agricultural and industrial uses impact our water quantity and quality. Management and mitigation efforts across the country are compromised and drinking water supplies are threatened, undermining public safety; costing billions in infrastructure damage; impeding economic growth; and endangering the survival of some species and the integrity of entire ecosystems.

Climate change is accentuating existing water quality and quantity management challenges in addition to presenting new and deeply complex water management concerns. We will see more intense and more frequent and extreme droughts, floods and wildfires; intensifying melt and retreat of the glaciers providing drinking and irrigation supplies; and accelerating groundwater and watershed stress in populated regions across the country.

In this age of global warming, ensuring

sustainable, equitable access to water and protecting and restoring rivers, lakes, glaciers, aquifers and wetlands will be critical to our long-term security, well-being, and prosperity as a nation. Yet, Canada currently lacks a robust commitment, plan, or legal framework at the federal level to drive effective coordinated action on increasingly common, extreme and costly water problems.

With these water problems worsening, a stronger federal focus on fresh water is urgently needed. A coordinated approach that leverages our world-class water science and technological innovation, advances reconciliation with Indigenous peoples, and enhances partnerships between all orders of government can ensure Canada is prepared to respond to climate change impacts, and to prosper in a rapidly changing world.

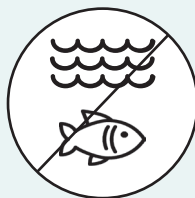
This concept note explains how the federal government can provide leadership and better exercise its jurisdiction to help solve Canada's emerging national water crisis. It proposes specific and achievable legal and policy solutions that will position Canada as a global leader in water prediction, management and sustainability.

### Canada's Emerging Water Crisis

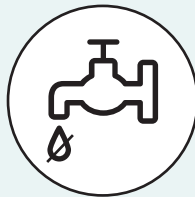
Canadians can no longer assume our waters are boundless, safe and secure:



**Intensifying floods and droughts are escalating the costs to the Canadian economy:** We estimate that a staggering \$28B has already been spent responding to and repairing the impacts of climate-related water disasters between 2000 and 2017. This financial burden is spread unevenly and is unsustainable for many Canadians, and is expected to grow rapidly.



**Degraded water quality and habitat loss is undermining the ecological integrity of our waters:** Toxic algae blooms in some of our largest fresh water lakes and development pressures infringing on preserves and parks are threatening our ability to use our waterways for recreation and fisheries, endangering important species and undermining our efforts to maintain protected areas.



**Inadequate source water management is undermining public confidence in provision of basic human rights:** Lack of a coordinated approach to water management is denying access to safe drinking water, particularly for many First Nations and other communities vulnerable to source water contamination.

The map of Canada on pages 10-11 illustrates just a sample of examples of these diverse and widespread water problems occurring across the country – from recent extreme floods and droughts to toxic algae blooms to high-profile resource extraction protests to lack of or poor-quality drinking water. These are not one-off occurrences; they are serious water issues already visible in our communities and are symptoms of

larger – and more serious – trends that stem from Canada's persistent challenge of not effectively coordinating water decision-making and management activities across jurisdictions. These increasing issues of water availability and quality not only affect the ecosystems of our rivers, lakes, streams and parks and protected areas, but also our quality of life stemming from their use, the Canadian economy, and public health and safety.

## CLIMATE CHANGE SCIENCE SHOWS CANADA IS 'LOSING ITS COOL'

The climate across the country has been showing clear signs of change in recent decades.<sup>1,2</sup> According to scientific research, the temperature has increased in all regions of Canada with nation-wide warming of about 1.7°C since 1948. Hotspots in western and northern Canada show that the average air temperatures have risen 2°C since 1950 and winter temperatures have risen by about 4°C and in some areas as much as 6°C. These warming trends are amongst the highest in the world. Canada is 'losing its cool' at a rate of about two times more than the global average and Canada's North is warming about three times more than the global average. These warming trends are having significant impacts on the water cycle:

- **Precipitation** is increasing across all regions, particularly in northern Canada and parts of Manitoba, Ontario, northern Quebec, and Atlantic Canada. Precipitation is also increasingly falling as rain rather than snow, especially in spring and fall. Changing timing and amounts of precipitation is a driver for floods and droughts.
- **Extreme precipitation** amounts accumulated over a day or shorter are projected to increase, increasing the potential for rain-generated local flooding, including in urban areas. Multiple day rainfall events have increased by 50% in parts of the Prairies since the 1950s and are associated with wide-spread summer flooding. Extreme summer dry periods are expected to increase and will contribute to increased frequency and intensity of soil moisture deficits and drought, particularly through the southern Prairies and interior BC. The Prairies are already in the second severe drought of the 21st C, which is a higher frequency than drought occurrence in the 20th C.
- **Duration of snowcover** in winter and spring is steadily declining, by as much as 1-2 months over most of Western Canada since the early 1970's. This impacts ecosystems, winter travel and recreation and means less water is stored to form streamflow in spring and summer and increases the vulnerability to droughts.
- **Glaciers and icefields** are melting, thinning and retreating, some by several kilometres in the last century. This degrades mountain ecosystems and affects the drinking, hydroelectricity and irrigation water available to communities in BC and the Prairie Provinces.
- **Permafrost** is thawing at unprecedented rates, and disappearing at its southern boundary. This is causing forest conversion to wetlands at the southern boundary ecosystem and hydrological change and major instability of infrastructure such as buildings and roadways in the North.
- **River and lake ice breakup** are occurring weeks earlier in the spring, and fall freeze-up is occurring later in the winter, both have significant consequences especially for winter travel in northern regions but also for the timing and magnitude of peak streamflows and for increasing the season for lake evaporation.
- **Streamflow** is changing by the season; higher winter and spring streamflows and lower summer flows are resulting from earlier snowmelt. These shifts mean earlier snowmelt-related peak stream flows, including those due to earlier ice breakup and late-winter and spring rain falling on snowmelt events.

<sup>1</sup> Bush, E. and Lemmen, D.S., editors. 2019. Canada's Changing Climate Report; Government of Canada, Ottawa, ON. 444 p.

<sup>2</sup> The Changing Climate and Environment of the Interior of Western Canada. 2017. Changing Cold Regions Network. Retrieved from [http://www.ccrnetwork.ca/outputs/information-products/docs/Environmental\\_Change\\_in\\_Western\\_Canada.pdf](http://www.ccrnetwork.ca/outputs/information-products/docs/Environmental_Change_in_Western_Canada.pdf)



## BEHIND THE CRISIS: MISSING COMMITMENTS, AUTHORITIES, CAPACITIES FOR ACTION

Significant water expertise and experience exists across many sectors in Canada – academia, industry, indigenous governments, river basin organizations, and provincial/territorial and federal governments. However, we are missing critical commitments and planning and management capacities needed to address increasingly complex and often controversial water conflicts and challenges. Canada finds itself in this tenuous position unnecessarily because of a number of factors:

**WATER AUTHORITIES AND RESPONSIBILITIES ARE FRAGMENTED ACROSS RIVER BASINS WITH OVERLAPPING JURISDICTIONS AND INSTITUTIONS, WITH INSUFFICIENT INCENTIVES, MEANS, OR CAPACITY FOR GOVERNMENTS TO WORK TOGETHER EFFECTIVELY TO MANAGE SHARED WATERS AND SOLVE PROBLEMS.**

Most water management decisions are made locally, through provincial and Indigenous jurisdictions, yet the majority of our major river and lake basins are transboundary. The Mackenzie, Saskatchewan, and St. Lawrence are all examples of large and significant basins where jurisdictions overlap and are challenged in integrating and aligning management decisions across the various levels of government, despite their common reliance on shared waters. Federal, Indigenous, provincial, and local governments need to better work together to establish and enforce science-informed water quality and quantity regulatory requirements and thresholds. Existing regional water management bodies, such as the Prairie Provinces Water Board or the Mackenzie River Basin Board have insufficient mandate or authority to facilitate integrated river basin management. They lack the power to make decisions and take the action needed to implement cumulative effects assessments to solve the river-basin scale issues.

**MANAGING AND RESPONDING TO CHANGING WATER REGIMES, PARTICULARLY EXTREME FLOODS AND DROUGHTS, IS UNDERMINED BY LACK OF NATIONAL FORECASTING AND PREDICTION CAPABILITIES TO SUPPORT ALL LEVELS OF GOVERNMENT DECISION-MAKING.**

Canada has developed world-class hydrology and water quality prediction models but has not deployed them nationally for short-term forecasting or long-term prediction of changes to water availability and quality. Federally led monitoring and other archived data for water quality, groundwater and glaciers is sparse, incomplete and scattered across federal and provincial agencies and universities and regional community-based monitoring efforts. Floodplain mapping is incomplete and needs updating to address changing floods with climate change. These deficiencies result in data gaps and inaccessible information for cumulative impacts assessment, risk management, disaster planning and response, and for managing water as climate change alters hydrology and water quality.

**INDIGENOUS NATIONS ARE DISPROPORTIONATELY AFFECTED BY THE EMERGING WATER CRISIS AND INDIGENOUS AUTHORITY IN WATER GOVERNANCE IS NOT ADEQUATELY RECOGNIZED, SUPPORTED, OR RESPECTED.**

Indigenous peoples' inherent water rights, laws, and jurisdictions, in addition to their negotiated treaties, land claims and governance agreements, indicate their role as full partners in water and land use decision-making. This opportunity has yet to be realized, though Canadian governments have made extensive commitments regarding the role of Indigenous governments as full partners in the decision-making processes affecting water and lands. Tangible action requires co-design of consistent, comprehensive plans and protections for waters that flow through their communities and traditional territories (see further discussion on page 17).

**SUSTAINED ACTION ON CLIMATE AND WATER ADAPTATION IS HAMPERED BY A LACK OF PEOPLE AND RESOURCES ASSIGNED TO TACKLE THE CHALLENGES AND IS EXACERBATED BY WEAK AND INSUFFICIENT OVERARCHING NATIONAL LEGAL AND INSTITUTIONAL ARCHITECTURE FOR WATER MANAGEMENT.**

Absent a national legal framework for water – or even a widely endorsed and celebrated vision – federal capacity for fresh water management has diminished substantially over the past generation as the federal policy framework for water has languished and become outdated. Our core federal water law – the *Canada Water Act* (1970) – has not been reviewed or significantly updated in decades. It no longer achieves the required balance to protect our communities, economy, and rivers, lakes and streams. Without clear vision and action, policy implementation is increasingly fragmented across a range of federal departments and shared haphazardly with the provinces, territories and Indigenous governments, making spending inefficient and ineffective and ultimately making water management dangerously ineffective.

### THE BOTTOM LINE


Canada faces a rapidly emerging water crisis.

We do not currently have the necessary capacity to drive the level of cooperation and collaboration needed to deal with Canada's changing hydrological realities and the implications for communities and economies are dire. Our national legal and institutional architecture for water management is weak, ineffective and outdated.

Modern, innovative, forward-thinking, and collaboratively developed water management and governance institutions are urgently needed to deal with the challenges of the 21st Century and will lead us to success.

The federal government, in partnership with Indigenous Nations, provincial and local governments, can draw on our culture of private and public sector innovation, and an existing base of Western and Indigenous knowledge, to develop robust solutions that position Canada as a leader for water solutions on the global stage.


# CANADA'S EMERGING WATER CRISIS: REGIONAL EXAMPLES



Permafrost thaw causing washouts and collapse along Dempster Hwy




Disappearance of Slims River caused by glacier retreat



15/17 measures of environmental health in decline Wood Buffalo National Park



Fort McMurray Forest Fires 2016  
\$8.9M inc. drinking water treatment



Rocky Mountain Floods 2013  
\$6B and 100,000 evacuated



TransMountain Pipeline delays cost \$15B/year



Record BC Floods & Fires 2017-2018



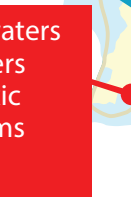
Prairie Droughts 1999-2004  
\$6B



Prairie Summer Floods 2014  
\$1.5B




Warming waters and fertilizers causing toxic algae blooms



Nestle ground water mining  
90% of Six Nations lacks drinking water



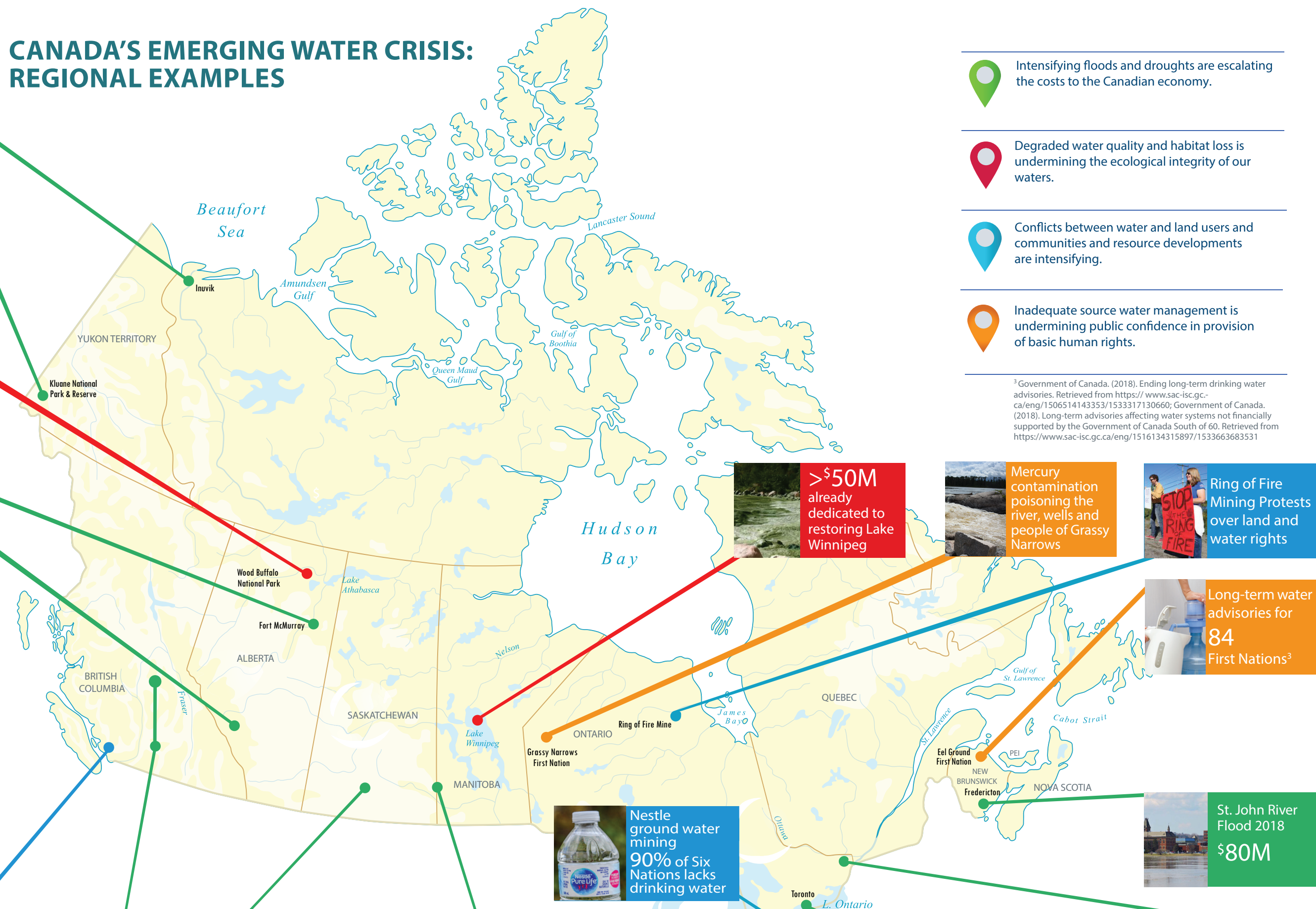
Toronto Floods 2013  
\$1B





Ontario / Quebec Floods 2017  
\$22M





St. John River Flood 2018  
\$80M



 Intensifying floods and droughts are escalating the costs to the Canadian economy.

 Degraded water quality and habitat loss is undermining the ecological integrity of our waters.

 Conflicts between water and land users and communities and resource developments are intensifying.

 Inadequate source water management is undermining public confidence in provision of basic human rights.

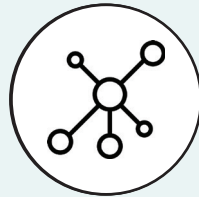
<sup>3</sup> Government of Canada. (2018). Ending long-term drinking water advisories. Retrieved from <https://www.sac-isc.gc.ca/eng/1506514143353/1533317130660>; Government of Canada. (2018). Long-term advisories affecting water systems not financially supported by the Government of Canada South of 60. Retrieved from <https://www.sac-isc.gc.ca/eng/1516134315897/1533663683531>



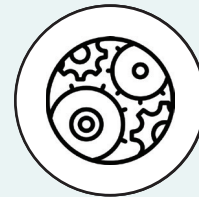
## SOLUTIONS FOR WATER SECURITY

Most water management decisions are made locally, through provincial and Indigenous jurisdictions. Yet the majority of our major river and lake basins are transboundary, involving multiple provinces, Indigenous communities and sometimes the United States in basin management. A balanced way to strengthen the health and protect the ecosystem services of these shared waters

is through a more integrated approach to planning at the river basin level. This approach requires all of these orders of government to work together. Importantly, because these waters cut across jurisdictional boundaries, rights and responsibilities, this approach requires a meaningful federal role, particularly in four key areas:



**1. Creating and mobilizing the knowledge needed to predict and respond to water problems** – by providing centralized and harmonized collection and dissemination of water information; water predictions including flood and drought forecasting; and decision-support services through a *Canada Water Security Centre*.



**2. Strengthening transboundary water management and cooperative federalism** – by prioritizing healthy and intact river basins, as well as capacity and commitment to anticipate, investigate, avoid and resolve disputes through a *National Water Commission*. The Commission would also guide water management and water-related climate mitigation and adaptation strategies through the 21st century. This role includes understanding and making recommendations regarding evolving public opinion and best international practices, for example fiduciary duty and public trust concepts articulated in a modernized law.

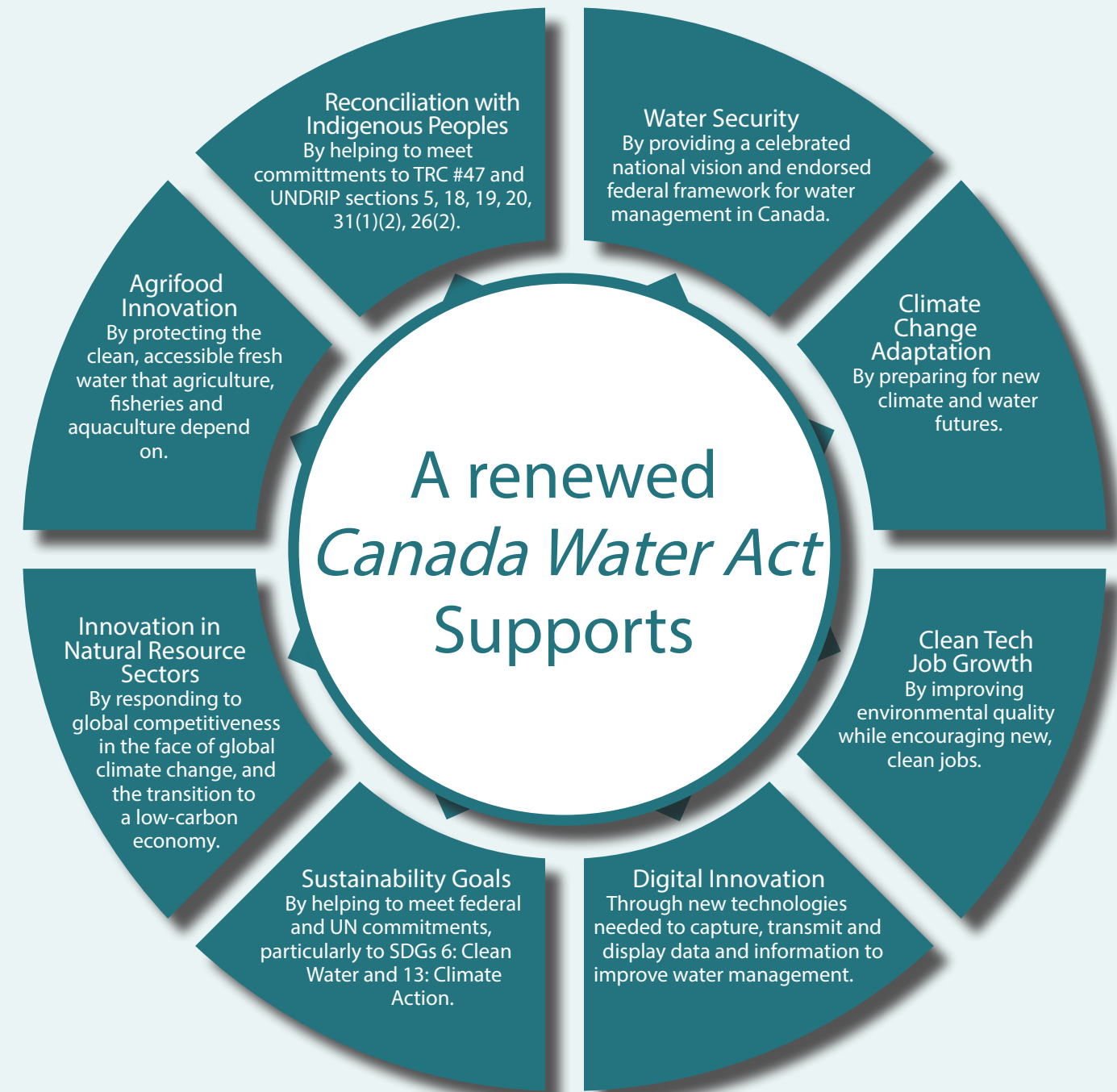


**3. Strengthening reconciliation with Indigenous peoples** – by ensuring the *Canada Water Act* is consistent with the *United Nations Declaration on the Rights of Indigenous Peoples* and adopting a consent-based, co-drafting approach to renewing the *Canada Water Act* in partnership with Indigenous governments. This includes reaching agreement on the policy objectives and goals of the Act, and how these support Indigenous peoples' goals and rights to self-determination, and implementation of Indigenous inherent, Aboriginal and treaty water rights and roles in water governance and management.



**4. Improving collaborative river basin planning** – by building durable partnerships for water management and decision-making with provinces, territories and Indigenous governments with shared watersheds, with a clear outcome of building resilience to extreme events, identifying priority areas for watershed restoration, and ensuring effective environmental flow regimes are in place across levels of jurisdiction and authority.

## A RENEWED CANADA WATER ACT CAN SUPPORT SUCCESS IN MANY OVERLAPPING AREAS OF ENVIRONMENTAL, ECONOMIC AND SOCIAL POLICY PRIORITIES IN CANADA



# INSTITUTIONS TO OVERSEE AND DELIVER WATER SOLUTIONS

## NATIONAL WATER SECURITY COMMISSION (NWSC)

### FUNCTION

An oversight authority with investigative, adjudicative and enforcement powers that works either independently or together with other orders of government as appropriate to anticipate disputes and facilitate resolutions in support of water management for waters that flow along or across internal or Canadian borders or boundaries.

### GOAL

Coordinated federal policies on water.

### GOAL

Ensure the ecological integrity of transboundary waters and associated aquatic ecosystems.

### OBJECTIVES

1. Protect key national hydrological features such as rivers, glaciers, lakes, wetlands, deltas, periglacial environments, aquifers, and permafrost.
2. Facilitate Indigenous water, drinking water, and water rights implementation.
3. Orchestrate and implement evolving federal flood and drought risk management policies as informed by an emerging capacity to integrate both flood and drought prediction and forecasting.
4. Oversee empowered river basin management boards and international river basin management by providing Canadian input and enforcement to the International Joint Commission.
5. Harmonize national transboundary surface water and groundwater management.
6. Direct funding for timely action, and reinvigorate a national flood damage reduction program including all orders of government and an appropriate role for the insurance industry.
7. Make recommendations regarding evolving public opinion and best international practices such as fiduciary duty and public trust concepts articulated in a modernized law.

### OBJECTIVES

1. Lead federal role on interprovincial/ international water management.
2. Designate hydrologically, ecologically and culturally significant waters for protection and restoration, including rivers, glaciers, lakes, wetlands, deltas, periglacial environments, aquifers, and permafrost.
3. In collaboration with other orders of government as appropriate, set and enforce minimum standards for cumulative effects on river basin health.
4. Mandate integrated river basin planning and management where warranted, consistent with federal roles and responsibilities, or in situations of national interest or concern.
5. Investigate coherence and adherence to federal policy in river basin plans.
6. Ensure that river basin management decisions are made based on credible information provided from water prediction models.
7. Create and implement a dispute resolution mechanism to address interjurisdictional water disputes and failures to meet established standards.

## CANADA WATER SECURITY CENTRE (CWSC)

### FUNCTION

A water policy, science and technical centre of excellence to provide centralized observation, creation, collection and dissemination of water information between federal, provincial and territorial agencies, Indigenous governments and organizations, river basin organizations, universities, industries and the public.

### GOAL

Predict and respond to water security problems and opportunities.

### GOAL

Integrated river planning and management.

### OBJECTIVES

1. Coordinate water quantity and quality monitoring across federal, provincial and territorial governments.
2. Provide a national water information repository that includes inventory of water quality, quantity and use, and risks to infrastructure.
3. Conduct national modelling and decision support for flood and drought forecasting
4. Provide water quality and quantity prediction in support of climate change adaptation, freshwater ecosystem management and source water protection.
5. Assess threats to significant hydrological features such as rivers, glaciers, lakes, wetlands, deltas, periglacial environments, aquifers, and permafrost.

### OBJECTIVES

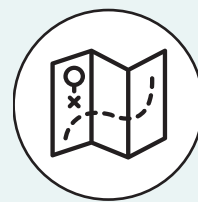
1. Identify water contamination threats to human health, and advise on source water protection.
2. Ensure cultural water needs are identified and protected.
3. Collaborate with provincial, territorial and Indigenous governments on river basin and regional planning in areas of shared or overlapping jurisdiction.
4. Lead federal river basin, aquifer and regional planning and implementation where warranted in situations of national interest such as persistent impairment of source waters and real and present threats to public health, or evidence or prediction of reoccurring or sustained extreme events.
5. Create river basin institutions with authority to develop and implement plans.
6. Support a traditional knowledge collaboration system (i.e. Indigenous Guardians program).



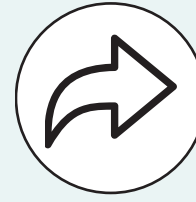
On the previous pages we present two institutions that would enable the federal government to greatly enhance its ability to act on Canada's critical needs and which can be given authority and mandate in an updated *Canada Water Act*. These two institutions have distinct but complimentary mandates and authorities because of the many water functions needed – including those related to

information, knowledge, planning, oversight, and transboundary dispute resolution. In most cases, these functions are missing from current federal water management portfolios; in some cases, existing services that rest with various departments can be consolidated.

By achieving the goals and objectives of these enabling institutions, we will:



1. Guide water management and water-related climate mitigation and adaptation strategies through the 21st century.



5. Respond to opportunities to better deploy our water resources for sustainable economic benefit, community need and environmental remediation.



2. Strengthen positive and productive relationships and decision-making between Crown and Indigenous governments so that source waters are protected and remediated.



6. Reduce the harmful effects on the health and safety of Canadians and impacts on the Canadian economy.



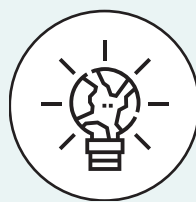
3. Reduce the costs of mismanagement, reduce conflicts, and agreement on how mutually beneficial development should proceed.



7. Bring rapidly rising disaster assistance payments under control.



4. Strengthen scientific, technical and administrative capacity to measure, predict, forecast and respond to water problems both internal and external to Canada.



8. Make Canada shine on the global stage by showing the world how to implement water security.

## PARTNERING WITH INDIGENOUS NATIONS IN DESIGNING, DRAFTING, AND IMPLEMENTING A MODERNIZED CANADA WATER ACT

A modernized *Canada Water Act* should be developed jointly with Indigenous Nations through a partnership approach in order to fulfill Canada's commitment to implementing the *United Nations Declaration on the Rights of Indigenous Peoples* – particularly, Article 19, related to achieving free, prior, and informed consent before adopting and implementing legislative or administrative measures affecting Indigenous peoples.

Co-drafting and co-development processes are underway now at the federal level for a number of policies and laws, including the fiscal relationship between Canada and Indigenous peoples, *First Nations Safe Drinking Water Act*, and *Indigenous Languages Act*. Experience from Canada's North also demonstrates what is possible. Over the past decade, the Government of the Northwest Territories co-drafted several highly contentious bills with Indigenous governments, including the *Species at Risk Act* and the *Wildlife Act*. It's clear from both the NWT and the current federal experience that these processes are complex and iterative. However, when supported by a genuine Crown commitment to reconciliation and joint problem-solving, co-drafting can result in significantly improved, concrete outcomes - both in terms of legislation that reflects Indigenous peoples'

priorities as well as Crown aspirations and responsibilities; improved nation-to-nation relationships where the focus is on securing mutual consent; and, increased acceptability of a bill with Indigenous Nations.

A fulsome partnership approach includes several phases:

- Jointly determining what the process will be for Indigenous and Crown governments to work together to reform the existing legislation (including determining questions around representation, accountability, timelines, communications, financial and human resource support, etc.). To be successful, any "co" process must be based on recognition of Indigenous rights, respect, cooperation, and partnership.
- Reaching agreement on the policy objectives and goals of the Act, and how these support Indigenous peoples' goals and rights to self-determination.
- Co-drafting the legislation itself, through working together to draft a bill before it is introduced into the parliamentary process.
- Co-designing and co-governing new institutions.
- Ongoing joint evaluation of the implementation of the legislation.



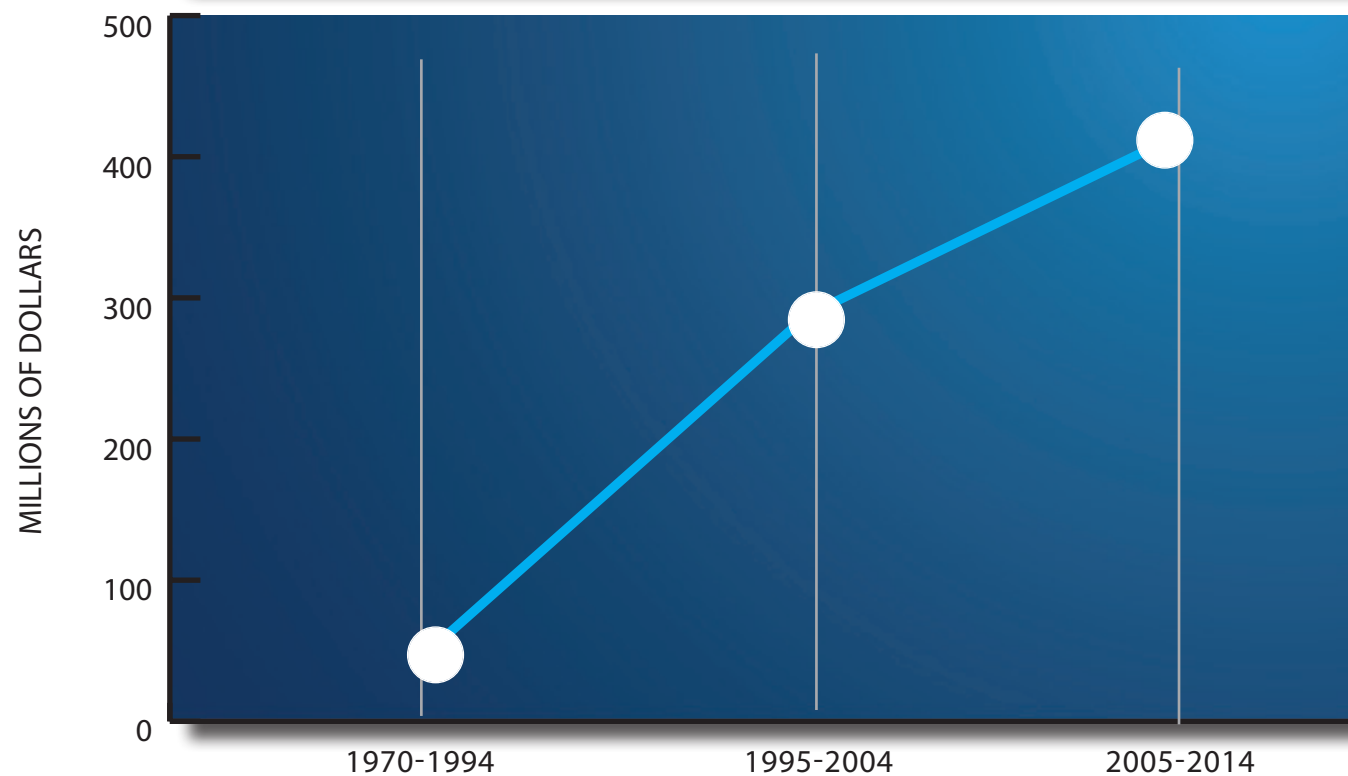


## WE CAN SAVE BILLIONS BY MODERNIZING THE *CANADA WATER ACT*

The financial cost to Canada of extreme water-related events is skyrocketing. A recent Parliamentary Budget Office report<sup>4</sup> on the federal Disaster Financial Assistance Arrangements (DFAA) program that reimburses provinces and territories for some damages resulting from natural disasters suggests that the rising cost of damages from extreme weather events could in time become crippling to the Canadian economy. The average total annual payments in indexed dollars rose from \$54M a year from 1970 to 1994, to \$291M a year between 1995 and 2004, to \$410M a year between 2005 and 2014. This represents an increase of 660% in 2010 dollars. This is a small fraction of the total debited from the economy due to these events, which we have estimated to have exceeded \$28B from 2000 to 2017.

Investments made today to support people and institutions to carry out critical tasks pale in comparison to the predicted future costs of inaction. By proactively enabling the specific water solutions identified in this concept note, Canada can save billions of dollars by preventing damage to infrastructure and ecosystems; reducing disaster payments for cleanup and recovery and mitigating long-term healthcare costs associated with poor water and environmental conditions and the increasing physical and mental health burden of extreme events. Furthermore, the federal government can carefully target existing expenditures and realize new efficiencies between federal departments with water portfolios to financially support the adoption of these water solutions.

AVERAGE TOTAL ANNUAL DFAA PAYMENTS



<sup>4</sup> Office of the Parliamentary Budget Officer. (2016). Estimate of the Average Annual Cost for Disaster Financial Assistance Arrangements due to Weather Events.

## WATER - A PUBLIC TRUST AND KEY TO THE CANADIAN IDENTITY

Water is central to Canada's culture, history and national identity. Our vast network of lakes, rivers, glaciers, deltas and wetlands makes us feel fortunate and proud. We recognize water as a foundation for healthy communities, economies and nature.

Canadians should at a minimum expect that all federal policies and laws are in harmony with the resolution passed by the UN General Assembly, and enjoined by Canada, declaring water as a basic human right. Further, they should expect their federal government, with regard to its own water-related decisions, as well as with regard to joint decisions made together with other orders of government, to embrace a legally-binding duty of care for the "public trust" - those assets held in common for all Canadians, present and future. Similar notions have long been embraced in other industrialized countries including the United States, Great Britain, and Australia.

## IN CONCLUSION

It is no longer desirable – or even possible – to maintain the status quo in terms of water management and governance in Canada. Our country's water resources are changing rapidly, fuelled by a changing climate, altered hydrology and fragmented water decision-making across shared drainage basins and jurisdictions. The emerging water crisis is affecting Canadians' safety in face of extreme events and undermining the public's trust in government's ability to protect their homes and properties from floods and fires, provide adequate food in times of drought, provide safe water for drinking and ensure clean waterways for fishing and swimming.

Addressing the growing public anxiety emerging from our inability to get ahead of these water availability and quality issues offers a genuine opportunity for positive action and leadership by the federal government to restore public confidence and build water security. A commitment to prioritizing water security for all Canadians will take all hands on deck – federal, provincial, territorial, Indigenous governments and public and civil society organizations rowing in the same direction.

Canada has to first modernize its legal and institutional architecture that will enable a strengthened cooperative federalism approach to shared water decision-making and management. This concept note offers the solutions needed to implement actionable and achievable legal and policy solutions for the federal government to play a leadership role in bringing everyone together.

We believe that improving water security is a cornerstone element for successfully managing and adapting to many of the impacts of a changing climate. Through a modernization of federal water law, we can make the lives of Canadians more healthy, affordable, and enjoyable, creating a better, safer and more secure water world for ourselves, our children and grandchildren.

Together we can build on the common desire of Canadians to recognize water as part of our national identity and to show the world that we are not just a water wealthy country but also a water solutions country.



