



Government
of Canada


Gouvernement
du Canada

Canada

A large, artistic photograph of water. The top half shows a wavy surface of blue water with light reflecting off it. The bottom half is an underwater view, showing light rays filtering down from the surface and several bubbles rising from the bottom. The overall color palette is various shades of blue.

Toward the Creation of a Canada Water Agency

Stakeholder and Public Engagement
What We Heard



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1.0 Message from the Minister



The Honourable Jonathan Wilkinson P.C., M.P.
Minister of Environment and Climate Change

I am pleased to present this synthesis of the advice and recommendations from Canadians on the creation of a new Canada Water Agency.

Canada's freshwater resources are an important part of our heritage, our culture and our national identity. Canadians know that no resource is more important to our economy and our health and well-being than safe, clean and secure fresh water.

Canada is home to a fifth of the world's freshwater resources. But our fresh water is under threat from harmful pollution and a changing climate. As many Canadians know first-hand, several parts of the country are particularly vulnerable to floods, droughts and poor water quality.

The time is now to create a Canada Water Agency, to work with our provinces, territories, Indigenous communities, local authorities, scientists and interested Canadians, to find the best ways to keep our water clean and well-managed.

The perspectives and recommendations shared with us during public consultations provide a strong foundation upon which to build. Thank you to everyone who participated and shared insights in this process. I look forward to continuing to work together to ensure that all Canadians enjoy safe, clean, and secure fresh water now and into the future.

2.0 Message from the Parliamentary Secretary



Terry Duguid, M.P.

Parliamentary Secretary to the Minister of
Environment and Climate Change Canada

I am honoured by the invitation of the Minister of Environment and Climate Change, the Hon. Jonathan Wilkinson, to lead the Government of Canada’s process to create a Canada Water Agency.

Climate change, coupled with familiar persistent pressures, challenge our ability to manage and protect this valuable resource. A Canada Water Agency presents a tremendous opportunity to advance our collaborative approaches to managing and protecting Canada’s freshwater.

In December, we asked stakeholders and the public for their views on freshwater challenges across Canada, and offered for consideration a discussion paper, “Towards Creation of a Canada Water Agency”. It was exciting to see both the level of participation in our various virtual forums and the number of people that took the time to provide their advice and recommendations through our online survey or via written submissions.

I add to the Minister’s my thanks to all participants. Your active interest and valued input inspires us in the work ahead to establish a Canada Water Agency.

Engagement at a Glance!



2,700
Canadians Engaged



75
Days Engaging with Canadians

900
National Forum Participants



6
Regional Forums

1,400
Regional Forum Participants



54
Forum Panelists



45,000
Website Visits



1,750
Website Subscribers



115
Email Submissions

33
Survey Questions



306
Completed Surveys

3.0 Executive Summary

The Prime Minister has directed the Minister of Environment and Climate Change, with the support of the Minister of Agriculture and Agri-Food Canada, the Minister of Natural Resources and the Special Representative for the Prairies to create a new Canada Water Agency (CWA) to work together with the provinces, territories, Indigenous communities, local authorities, scientists and others to find the best ways to keep our water safe, clean and well-managed.

The Prime Minister also directed the Minister of Environment and Climate Change Canada to “develop further protections and take active steps to clean up the Great Lakes, Lake Winnipeg, Lake Simcoe and other large lakes.”

These two commitments are being addressed in an integrated manner. To support this effort, Environment and Climate Change Canada (ECCC) released a public discussion paper in December 2020: “Toward the Creation of a Canada Water Agency”¹.

The paper acknowledges that freshwater management is a shared responsibility between Canada’s federal, provincial, territorial and Indigenous governments. In creating the CWA, the Government of Canada has committed to ensuring that each jurisdiction is respected, and that overlap and duplication is avoided.

ECCC invited Canadians to provide their thoughts and ideas via participation in national and regional forums, an online survey or written submissions.

Input was received from individuals, municipal government representatives, non-government organizations, industry representatives, academia and Indigenous peoples.

Nearly all participants supported creating a CWA.

1 Environment and Climate Change Canada. (2020). “Toward the Creation of a Canada Water Agency; Discussion Paper.” Government of Canada. https://www.placespeak.com/uploads/6321/Canada_Water_Agency_Discussion_Paper.pdf



Maligne Lake in Jasper
National Park, AB

The discussion paper proposed 10 objectives for the federal government. We heard strong support for all 10.

In order from most to least supported the 10 objectives are:

- Federal policies to promote effective management and protection of freshwater resources and ecosystems in Canada for 21st century challenges and beyond – including adapting to climate change.
- Data and information are available to support informed decision-making at all levels.
- Canadians are actively engaged in managing and protecting fresh water.
- Indigenous peoples play an increased role in management of Canada’s fresh water.
- Canada has and applies cutting edge science to tackle the freshwater challenges of the next century, including climate change.
- Canada is a leader in sustainable agricultural water management.
- Collaborative arrangements are in place and support effective management of domestic and Canada-U.S. transboundary fresh waters.
- Canada is a global leader in freshwater technology, innovation, and infrastructure.
- Canada has a state-of-the-art prediction system for floods and droughts that informs climate change adaptation and disaster risk reduction.
- Canada’s economic sectors have the fresh water they need to grow sustainably, and the tools they need to improve freshwater management and use.



Top to bottom:
Steep Rock on shores of Lake Manitoba, MB
Miramichi River, Doaktown, NB

Within the large, diverse volume and range of ideas and opinions expressed, some were shared by a majority of contributors. These were the major areas of convergence:

Reconciliation – Canadians emphasized the importance of reconciliation with Indigenous peoples. They underscored the important role a CWA could play in working with First Nations, Métis and Inuit to include Indigenous science and knowledge in decision-making, involving Indigenous peoples in freshwater governance, and addressing freshwater challenges faced by Indigenous communities in Canada.

Regional considerations – While recognizing the importance of consistent national approaches to freshwater protection and management across Canada, Canadians highlighted the role a CWA could play in helping to respond to regional freshwater priorities, including through strong regional science, monitoring and engagement.

Climate Change – A clear priority and concern across Canada: the impacts of climate change on flooding, drought, water supply, water quality, aging water infrastructure, and its implications for Canada’s economic sectors. Canadians identified potential roles for the CWA in relation to improving forecasting and prediction tools, provision of freshwater monitoring, data and information at appropriate scales, and development of adaptive management approaches and decision support tools.

Watershed governance – Participants also frequently raised the importance of holistic, integrated and place-based approaches to freshwater management, and proposed a role for the CWA in advancing watershed approaches to freshwater management in Canada.

Coordination – Canadians clearly want the Government of Canada to take a coordinated and collaborative approach to freshwater management. They told us that one of the biggest opportunities for a CWA is in providing a whole-of-government approach at the federal level and enhancing coordination and collaboration with provinces and territories to better align policies and actions to address key freshwater challenges.

Freshwater science – Canadians told us that enhancing freshwater science was essential to tackling challenges and keeping our water safe, clean and well-managed. They see a CWA as supporting coordination of scientific activities across governments and with academia and non-government organizations, and increasing the alignment of freshwater science to current and emerging challenges.

Access to freshwater data – Canadians stressed that access to high quality data and information is crucial to informing effective freshwater decision-making at all levels, and that enhancing the sharing of freshwater data and information is one of the biggest opportunities for a CWA.

Engaging Canadians – We heard loud and clear that Canadians value fresh water and want to be actively engaged in its management and protection. We were provided with many examples of how Canadians are already engaged. We heard that it is important for the CWA to build on and support further engagement of Canadians.

The participation of so many Canadians in the engagement process and the large amount of input and advice provided is highly valued and all will be considered as we continue the CWA creation process.



Glacier moraine, Akshayuk Pass, NU

4.0 Background

The Prime Minister tasked the Minister of Environment and Climate Change, the Minister of Agriculture and Agri-Food Canada, the Minister of Natural Resources and the Special Representative for the Prairies with creating a Canada Water Agency (CWA) to “work together with the provinces, territories, Indigenous communities, local authorities, scientists and others to find the best ways to keep our water safe, clean and well-managed”.

The Prime Minister also tasked the Minister of Environment and Climate Change to “develop further protections and take active steps to clean up the Great Lakes, Lake Winnipeg, Lake Simcoe and other large lakes”.

These two tasks are being addressed in an integrated manner. A discussion paper, “Towards the Creation of a Canada Water Agency”, published by Environment and Climate Change Canada (ECCC) on December 17, 2020, identified a series of freshwater management issues and opportunities.

The public comment period continued until March 1, 2021.

Feedback was received through ECCC’s National Freshwater Policy Forum, six Regional Freshwater Forums, an online survey hosted on ECCC’s PlaceSpeak website, and through direct correspondence with ECCC.

This “What We Heard” report synthesizes key messages received through this process.

Freshwater issues

Issues in the discussion paper, “Toward the Creation of a Canada Water Agency”, included:

- Freshwater objectives
- Freshwater policy, coordination and multi-lateral engagement
- Freshwater prediction to inform climate change adaptation and disaster risk reduction
- Indigenous peoples and freshwater management
- Agriculture and freshwater
- Economic sectors and freshwater
- Freshwater science
- Freshwater data
- Transboundary freshwater management
- Freshwater technology, innovation and infrastructure
- Engaging Canadians in managing and protecting fresh water

A separate dedicated process was used to seek input from provinces and territories. There is also a dedicated process to engage with First Nations, Métis and Inuit on creation of a Canada Water Agency, which began in 2020 and is ongoing. Input received through these processes is not reflected in this report.

For more information, please visit www.placespeak.com/CanadaWaterAgency.

5.0 Who we heard from

PlaceSpeak Survey

An online survey, hosted on ECCC’s PlaceSpeak site, asked Canadians 31 open-ended questions and drew 306 participants from all regions of Canada — individuals, non-government organizations, industry and government representatives, academia, and Indigenous peoples.

ENGAGEMENT NUMBERS

TOTAL NUMBER OF
CANADIANS ENGAGED
2,700

SURVEY SUBMISSIONS
306

DIRECT CORRESPONDENCE
SUBMISSIONS
115

NATIONAL FORUM
PARTICIPANTS
900

REGIONAL FORUMS
PARTICIPANTS
1,400

Figure 1. Province or territory of residence

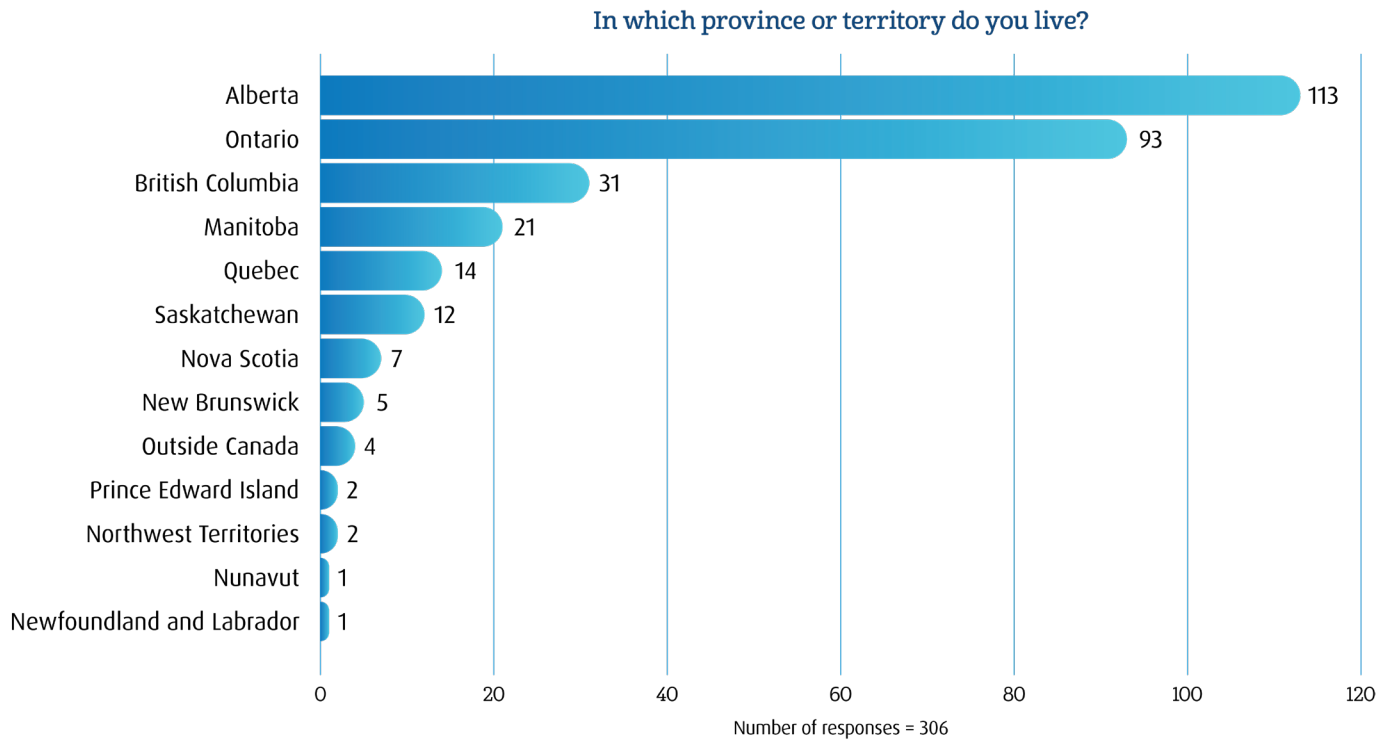
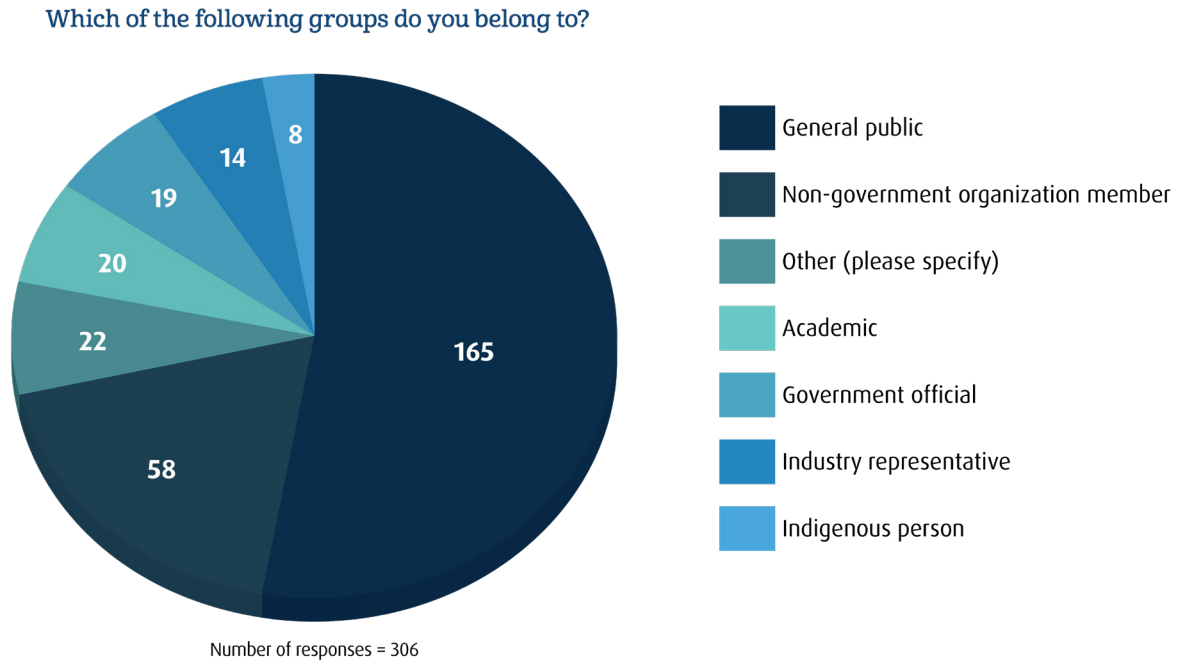


Figure 2. Demographic group



National Freshwater Policy Forum

A virtual National Freshwater Policy Forum was held January 27-28, 2021 with eight panels, each focused on a different freshwater issue identified in the discussion paper. More than 30 panelists, representing diverse areas of expertise, knowledge, geographic interests and perspectives, provided insights on the issues and opportunities for a CWA. Approximately 900 Canadians attended nationwide.

Regional Freshwater Forums

As well, in February 2021, six virtual Regional Freshwater Forums engaged over 1,400 participants in Atlantic Canada, Quebec, Ontario, the Prairies, British Columbia and Canada’s North, offering opportunities to hear from experts on regional freshwater challenges, and for Canadians to take part in break-out group discussions.

REGIONAL FORUM PARTICIPATION

ATLANTIC CANADA FORUM

136

QUEBEC FORUM

136

ONTARIO FORUM

428

NORTHERN TERRITORIES FORUM

120

BC FORUM

235

PRAIRIE PROVINCES FORUM

373

Direct Correspondence

Some Canadians submitted feedback by direct correspondence with ECCC. In addition to 19 individuals, four submissions were received from Indigenous communities and organizations and 92 submissions were received from stakeholder organizations across Canada, representing industrial sectors and associations, corporations, academia, non-government organizations, and local governments. More than 40% of submissions were from industry, including agriculture, mining, petroleum, energy, utility, forestry, and manufacturing sectors. Roughly one third of submissions were from national organizations.

EMAIL SUBMISSIONS FROM ORGANIZATIONS

BY SECTOR

INDUSTRY

39

NON-GOVERNMENTAL ORGANIZATION

31

MUNICIPAL OR LOCAL GOVERNMENT

14

ACADEMIA

8

BY REGION

NATIONAL

37

ATLANTIC PROVINCES

8

QUEBEC

4

ONTARIO

24

PRAIRIE PROVINCES

12

BRITISH COLUMBIA

6

NORTHERN TERRITORIES

1

TOTAL EMAIL SUBMISSIONS

92

6.0 What We Heard

Common Concerns

Canadians nationwide clearly care deeply about protecting freshwater, the resilience of Canada’s freshwater systems, and the sustainable use of freshwater resources. They are also concerned about the increasing threat of floods and drought, the effects on communities, and the need for enhanced forecasting and prediction tools and resilient infrastructure. A great many participants shared with us that water quality is a top priority for them. Although specific water quality issues varied by region, many Canadians want water quality protection to be a priority role for the CWA. Beyond surface water challenges, improved understanding and protection of groundwater is also important, we heard. And, cutting across all issues: Canadians’ concern over the increasing frequency and magnitude of freshwater challenges due to climate change.

Shared Perspectives

Nearly all participants in the public engagement process support the Government of Canada’s effort to work collaboratively to better protect and manage Canada’s freshwater resources. A small number of participants indicated that they did not see value in the creation of a CWA, citing concerns including potential jurisdictional overlap and added regulatory burden.

Participants said:

“Establishing a Canada Water Agency that works together with the provinces, territories, Indigenous communities, local authorities, scientists and others to find the best ways to keep our water safe, clean and well-managed is essential to addressing our current and future freshwater challenges...”



Lake MicMac and Lake Banook,
Dartmouth, NS

Despite the diversity of participants, a number of views were shared by a majority of contributors:

Reconciliation – Many Canadians emphasized the importance of reconciliation with Indigenous peoples. Participants underscored the important role a CWA could play in working with First Nations, Métis and Inuit to include Indigenous science and knowledge in decision-making, involving Indigenous peoples in freshwater governance, and addressing water challenges faced by Indigenous communities in Canada.

Regional considerations – While recognizing the importance of consistent national approaches to freshwater protection and management across Canada, many participants highlighted the role a CWA could play in helping to respond to regional freshwater priorities, including through strong regional science, monitoring and engagement.

Climate Change – Climate change and its impacts on freshwater was identified as a clear priority. Participants across Canada frequently raised concerns over climate impacts on flooding, drought, water supply, water quality, aging water infrastructure, and implications for Canada’s economic sectors. Participants identified potential roles for the CWA in relation to improving forecasting and prediction tools, provision of freshwater monitoring, data and information at appropriate scales, and development of adaptive management approaches and decision support tools.

Watershed governance – Participants nationwide frequently cited the importance of holistic, integrated and place-based approaches to freshwater management, and many proposed that the CWA advance watershed approaches.

Participants said:

“Climate change is adding to and exacerbating existing threats to freshwaters...”

“Advancing reconciliation with respect to water management matters under federal jurisdiction is a role that the Canada Water Agency could lead.”

“Watershed-scale planning and policies is without a doubt the most effective way to address freshwater challenges...”

“...in exercising a strong federal role, the CWA should recognize and respect that water issues should be identified and addressed on a regional basis.”

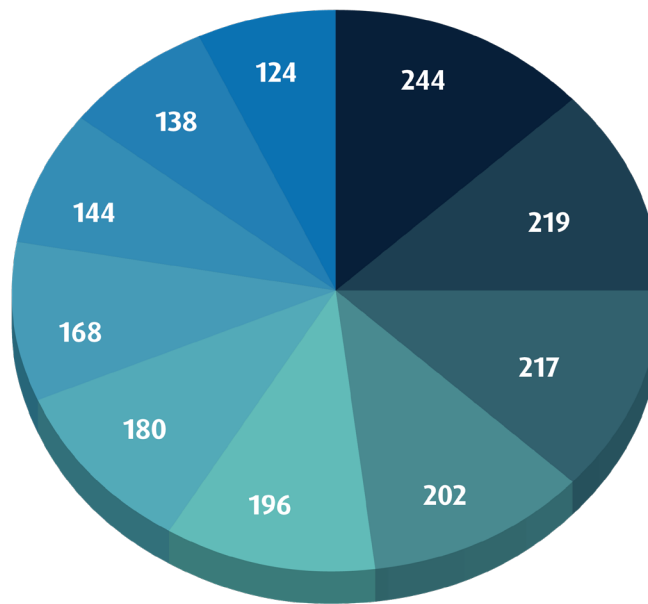


Feedback on Freshwater Objectives

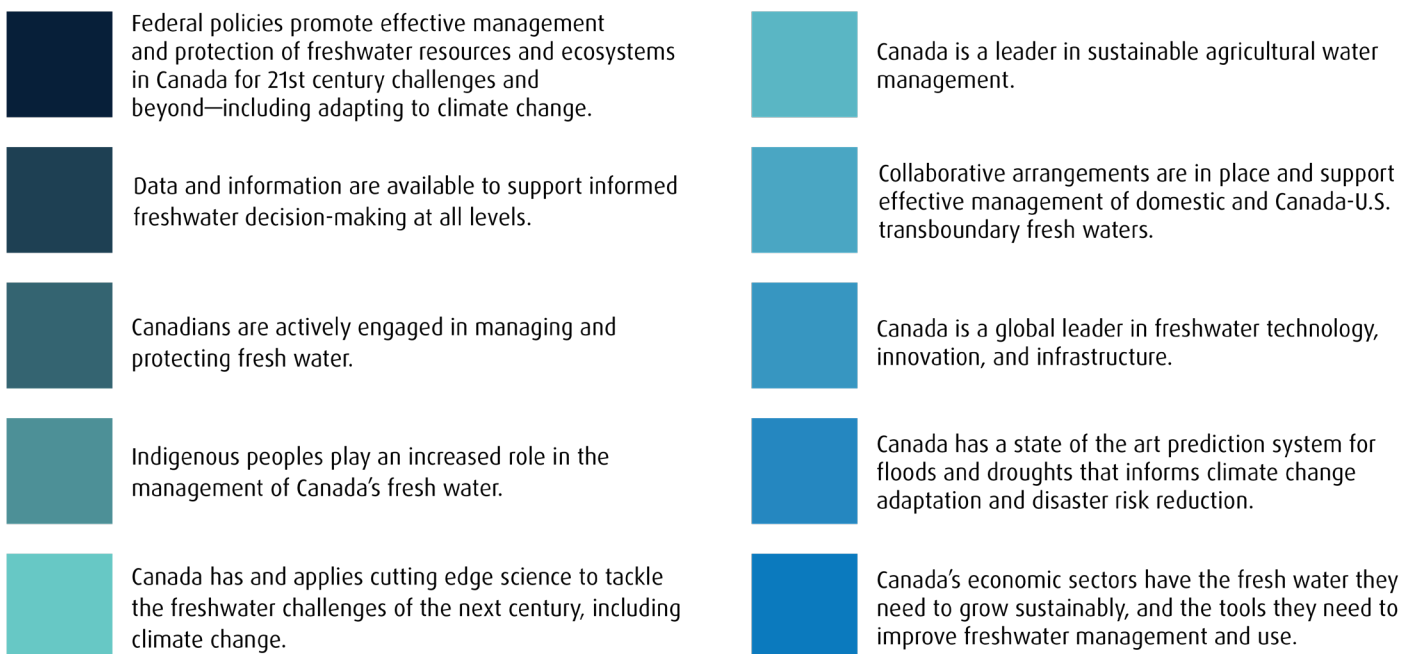
ECCC’s discussion paper proposed several potential objectives that the federal government could pursue to enhance freshwater management in Canada. Canadians were asked whether these were the right objectives, and which ones should be prioritized.

Figure 3: Freshwater Objectives

Which objectives are a priority for you?



Number of PlaceSpeak responses = 306



We heard strong support for all freshwater objectives presented in the discussion paper, with these identified as the top five priorities:

- Federal policies to promote effective management and protection of freshwater resources and ecosystems in Canada for 21st century challenges and beyond – including adapting to climate change.
- Data and information are available to support informed decision-making at all levels.
- Canadians are actively engaged in managing and protecting fresh water.
- Indigenous peoples play an increased role in management of Canada's fresh water.
- Canada has and applies cutting edge science to tackle the freshwater challenges of the next century, including climate change.

Some Canadians suggested additional objectives for federal government consideration including:

- A consistent national approach to freshwater management in Canada, implemented at a watershed or basin scale.
- Strong and consistent policies, regulations and enforcement across Canada to prevent freshwater pollution.
- Access to safe drinking water by all Indigenous communities across Canada
- Improved understanding and sustainable management of Canada's groundwater resources.
- Protection and restoration of freshwater ecosystems and preservation of their ecological functions and services.
- Ensuring that Canada's aquatic ecosystems and biodiversity have the fresh water they need to be healthy and resilient to climate change.

Participants said:

"We believe that the ten freshwater objectives outline in the discussion paper are an appropriate starting point that can and should form the core mandate of a new Canada Water Agency."

"The objectives outlined in the discussion paper are appropriate and do suitably reflect the scope a Canada Water Agency (CWA) should cover."



Freshwater lake in Whistler, BC

Feedback on Discussion Issues

ECCC's discussion paper presented 10 discussion issues, and opportunities in relation to each. Canadians provided their views on these opportunities and suggested others appropriate to the Government of Canada's role in managing freshwater.

Freshwater policy, coordination and multi-lateral engagement

Canadians want governments to take a more coordinated and collaborative approach to freshwater management, to break down perceived "silos" and create a more consistent and efficient approaches to freshwater management across Canada.

Context

Responsibility for freshwater management in Canada is shared between the federal, provincial, territorial and Indigenous governments. At the federal level the Federal Water Policy, created in 1987, provides a framework for coordinating federal actions on fresh water. Other federal policies – ranging from energy to agriculture to forestry – also bear on freshwater issues. Consequently, many federal departments have direct or indirect freshwater-relevant responsibilities. Provincial and territorial governments also play major roles in the management of fresh water. A number of existing federal-provincial collaborative agreements on important water bodies including the Great Lakes, St. Lawrence River, and Lake Winnipeg are in place for the betterment of freshwater management in Canada.

Participants said:

"The Agency's structure and governance objectives must ensure that it promotes coordination within the federal government and between provinces, territories, and Indigenous Nations whilst respecting their respective jurisdiction and authority."

"The CWA should serve as a central coordinator of freshwater priorities across the different federal government departments and should coordinate with the provincial, territorial and Indigenous governments on major initiatives required to ensure the protection and sustainability of Canada's freshwater resources... This coordination role could also extend to cross-boundary freshwater management with the U.S."

"...a critical role for the federal government will be to support existing programs...and provide high-level coordination to facilitate information sharing and support collaborative initiatives across the country."

"There is significant opportunity to enhance freshwater management by having the CWA oversee and prioritize a National management strategy."



Saskatchewan Legislature Building on
Wascana Lake, Saskatchewan

What We Heard

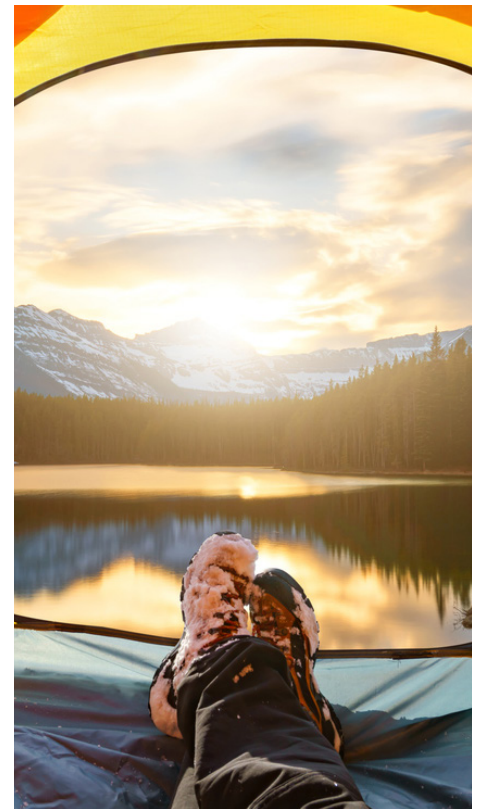
Canadians told us that the division of powers related to freshwater management in Canada is complex and confusing. Some emphasized the importance of understanding and respecting jurisdictional authorities; others expressed frustration with the shared jurisdictional nature of freshwater management. We heard that federal participation in areas of provincial and territorial jurisdiction would create regulatory confusion, overlap and duplication.

Many voices highlighted the interconnectedness of water and lamented the “siloes” inter-jurisdictional approach to its management. Concern was expressed about lack of communication, coordination, knowledge transfer and information sharing, collaborative research, and leveraging of existing capacity and resources between jurisdictions and other organizations. We heard strong interest in a whole-of-government approach to freshwater management and increased collaboration between federal, provincial, territorial and Indigenous governments.

A number of participants advocated for a more consistent national approach; some proposed a national freshwater framework with targets and objectives to guide regional and watershed scale initiatives, and transboundary watershed management. Others suggested developing common water quality and quantity guidelines among jurisdictions, particularly as a tool to support transboundary watershed management. Several participants also suggested a stronger federal role in coordinating cross-border science and data to support management of transboundary watersheds.

Differing views were heard on support for international freshwater activities beyond the Canada-US efforts. Some participants suggested Canada should focus on domestic freshwater issues, while others suggested the federal government should play a larger multilateral role and demonstrate international leadership in water management.

Most participants emphasized increasing local engagement on freshwater issues. Greater support for community-based water monitoring initiatives and stewardship networks was underscored as a way to help address freshwater issues at local and regional levels.



Freshwater prediction to inform climate change adaptation and disaster risk reduction

Canadians are worried about the impacts of climate change on freshwater quality, ecosystems, water availability, and drought and flooding, and believe better forecasting and modelling tools are needed to inform decisions on climate adaptation and disaster risk.

Context

Climate change amplifies freshwater management challenges across Canada. Our vast land mass and regional variability rules out a one-size-fits-all approach to adaptation. Decision-makers require reliable models and tools to predict, for example, regional or local scale floods, droughts, soil moisture levels and freshwater (including surface and groundwater) supply and demand.

What We Heard

In addition to improved forecasting, prediction and modelling at a regional and watershed scale (especially in the North), participants highlighted the need for increased monitoring, data and information to support that modelling, including soil moisture and snowpack information.

Participants also recommended developing tools and approaches to communicate modelling results, including products in everyday language, to support decision-making by different audiences and for different purposes.

Other suggestions included education and training to improve understanding and capacity to use prediction, forecasting and modelling services and products, and to enhance understanding by local decision-makers and the public of how climate may affect communities in future.

Participants said:

“The Canada Water Agency can play a key role in creating and mobilizing the knowledge...needed to predict and respond to water problems and opportunities by:... generating future water scenarios and forecasts to contribute to climate resilience and adaptation planning, which could include predicting floods and droughts, prioritizing water quality issues, predicting and mitigating the risk of harmful algae blooms, and understanding future water supply and use.”

“CWA can play a greater role in strengthening the resiliency of our freshwater resources from climate change impacts, by: updating flood hazard maps, which include climate scenarios;... and, enhancing information and knowledge on the vulnerabilities, risks and opportunities...”

“...water quantity prediction products and services must be available at multiple scales and must incorporate data sources that are reasonably current and accurate.... Water quantity prediction products, services and applications must support the testing and evaluation of a wide range of possible futures, and the regular updating of those predictions.”



Flooding on Rue Jacques-Cartier along the Ottawa River, Gatineau, QC

Indigenous peoples and freshwater management

Canadians were very clear that there must be greater and more meaningful involvement of Indigenous peoples in freshwater management. They expressed support for advancing reconciliation through freshwater management and emphasized that addressing freshwater issues affecting Indigenous communities must be a priority.

Context

The Government of Canada is committed to reconciliation with Indigenous peoples through a renewed, nation-to-nation, government-to-government and Inuit-Crown relationship based on recognition of rights, respect, co-operation and partnership as the foundation for transformative change. The Government of Canada's commitment to reconciliation includes implementing the United Nations Declaration on the Rights of Indigenous Peoples, as well as other collaborative initiatives and actions. In order to meaningfully engage on important freshwater issues and closely collaborate on the creation of the CWA, the Government of Canada is currently engaging with First Nations, Métis and Inuit through a separate and dedicated process.

The Government of Canada is also committed to ensuring First Nations have access to safe, clean drinking water. Work with First Nations communities to improve water infrastructure on reserves, end long-term drinking water advisories on public systems on reserves, and prevent short-term advisories from becoming long term is ongoing and is occurring through a separate process led by Indigenous Services Canada.

What We Heard

Many participants underscored support for advancing reconciliation and the importance of greater, more meaningful and direct engagement with Indigenous peoples including government-to-government, Nation-to-Nation, and Inuit-to-Crown involvement in freshwater management and decision-making.

Participants voiced concerns about water issues faced by Indigenous communities in several regions and called on the Government of Canada to continue to make safe drinking water for Indigenous communities a priority including the facilitation of access to infrastructure, education, resources and support.

Participants underscored the importance of relationships and partnerships with Indigenous peoples; many commented also on the need to better understand Indigenous ways of knowing and to consider Indigenous Knowledge alongside Western science. Some participants suggested adopting the holistic seven generations philosophy and applying it to freshwater management in Canada.

A number of participants pointed to the important role of Indigenous women as water keepers and the important place they should have at freshwater management tables.

Participants said:

"Indigenous groups should be involved in all discussions and planning. There are different concerns and relationships with fresh water...that a water agency should consider when developing a mandate."

"...Indigenous Knowledge holders must be full and active participants in knowledge generation, alongside scientists and decision-makers."

"Bring Indigenous women (in their role as water carers and managers) to the table."

"Highest priority is getting clean water to First Nations communities."



Agriculture and fresh water

Canadians told us that climate variability and climate change pose significant water-related challenges in agriculture.

Context

Agricultural producers rely on clean, reliable surface and groundwater for safe and efficient food production. The Government of Canada has a long history of working with the provinces and territories to help agricultural producers and processors continuously improve the sustainability of their operations, including the management of freshwater resources. Significant progress has been achieved through three successive five-year federal-provincial/territorial agricultural policy frameworks. The Canadian Agricultural Partnership is a \$3 billion, five-year (2018-2023) investment supporting collaborative agricultural discovery science and innovation. It focuses on priorities including climate change and soil and freshwater conservation, as well as programs that accelerate the on-farm adoption of resilient freshwater management practices.

What We Heard

Participants noted the need for data on regional water balances and models, monitoring and other tools to understand and predict the impacts of climate change on freshwater resources.

Participants also advocated for regional agricultural and watershed research programs to help improve water use efficiency and to inform sustainable and resilient agricultural practices.

Others noted the importance of data, information that meets agriculture sector needs, and easily understood products. The need for updated soil, groundwater, and wetland mapping was also noted.

As well, given the agriculture sector's regional nature, suggestions included the creation of repositories of region-specific freshwater data and information, such as best management practices. Other participants noted the value of collecting, managing and sharing data in a consistent manner across Canada to ensure it can be used nationally as needed.

Participants suggested that in addition to government support for natural and physical infrastructure, including irrigation projects, there is a need to develop innovative and transformative agricultural practices that improve water use efficiency in the agricultural sector such as development of systems to better recycle water, develop and employ soil moisture sensors, real-time irrigation optimization tools and various other emerging technologies. Also recommended: education, training and financial support for adaptive management approaches.

Innovative agricultural practices to minimize adverse impacts of agriculture on freshwater were advocated, as was the need to help develop and implement agricultural best management practices.

Participants said:

"We need water balances conducted on agricultural watersheds across Canada...and also climate change needs to be added into the assessment."

"[A Canada Water Agency should] 'work with provinces and territories, the agricultural sector and other partners to stimulate the development of innovative water-efficient technologies and decision-support tools and to accelerate adoption of practices and technologies that will increase resilience and sustainability.'"



Farm fields and river near
Glasgow, PEI

Economic sectors and fresh water

Canadians foresee numerous freshwater challenges for Canada's economic sectors, including from the impacts of climate change.

Context

Fresh water is an economic driver in Canada. Sufficient, dependable supplies of clean fresh water are critical to the success of every sector, and industry plays a special role in sustainable water management. There are many examples of actors in each economic sector taking steps to minimize the impacts of their activities on freshwater quality and quantity.

What We Heard

Participants noted that agriculture, energy, tourism, manufacturing, fishing and recreation and other economic sectors that rely on freshwater resources must adopt practices that improve their resiliency to the challenges ahead due to climate change, including innovative technologies and approaches.

Underscored were the importance of short-term forecasting and long-term predictive modelling. Participants also highlighted the need for standardized data collection and a central location for information sharing to ensure access to data and knowledge to support freshwater management decisions.

Many participants highlighted concern over the impacts certain economic sectors have on water quality and freshwater ecosystems and suggested the need for actors in these sectors to adopt cleaner practices.

Participants shared several positive examples of sector-specific strategies, including technologies, innovative approaches and best management practices that contribute to water conservation, improved water use efficiency, water reuse and recycling, among others.

Participants said:

"...many sectors will face challenges with freshwater in the next two decades. There is huge uncertainty associated with climate change... Adaptive management will also be important in those industries and sectors, as climate change proceeds."

"We believe the CWA should look to play a coordination and supporting role in fostering continued innovation in sustainable technologies for various economic sectors... The CWA could also play a centralized hub for federal funding opportunities related to agriculture and economic projects."



Seven Sisters Generating Station,
Winnipeg River, MB

Freshwater Science

Canadians told us that enhancing freshwater science was essential to keeping our water safe, clean and well-managed.

Context

Canada has a wealth of academic, government, non-governmental and community-based water-related scientific expertise. Many federal departments carry out freshwater science, including ECCC, Agriculture and Agri-Food Canada (AAFC), Fisheries and Oceans Canada (DFO), Natural Resources Canada (NRCan), Health Canada, and the National Research Council (NRC). Water research funding under the granting councils and Research Chair and Excellence programs has developed a significant network of water experts in academia. Canada employs this expertise to tackle challenges such as growing water demand and competition, drinking water contaminants, excess nutrients and pollutants, invasive species, and the protection of critical ecosystem services and aquatic biodiversity.

What We Heard

Many participants told us that freshwater policy and management must be based on sound science and Indigenous Knowledge, and that freshwater science is essential to informing decision-making at all government levels, by the private sector, other stakeholders and the public. The significant freshwater science capacity within Canada is recognized, but many believe more coordination is needed among researchers working in federal departments and agencies, for provinces and territories, and in academic institutions. Some noted that greater coordination would enhance collaborative and cross-disciplinary science and focus Canada's science capacity on national and regional freshwater science priorities.

Participants highlighted the need for more baseline data at a watershed scale to support assessments of new development proposals. They told us more research, monitoring and modelling is needed to anticipate and track climate change and other threats to freshwater quality, quantity and the health and functioning of freshwater ecosystems, including flood and drought prediction. Also cited was a need for science to help develop climate adaptation and resilience strategies and approaches.

Other priorities for freshwater science included increased understanding of the cumulative impacts of contaminants and other stressors on freshwater quality and ecosystems.

We heard that greater monitoring of freshwater quality and quantity is needed in all parts of the country, including the North. Participants suggested the need to monitor more substances in freshwater and expanding freshwater monitoring of surface water, groundwater, snow melt, soil moisture, and water use. It was suggested that more community-based programs would offer a cost-effective way to expand monitoring in remote areas or areas where monitoring is currently limited.

Participants also told us that more attention is needed to communicate and transfer knowledge to users.

Participants said:

"There is a role for the CWA in facilitating better coordination of freshwater science and cross-sector engagement."

"...we need a national approach to research, development and delivery of data, but it is also critically important that all local research and development is co-ordinated into the overall decision-making since each area of the country has its own unique situations. All levels must work together..."

"Include traditional knowledge in all science based studies."

"We need to have more funding for research to create a baseline of freshwater data across the nation, so when changes occur we can identify them and react quickly."



Lake of the Woods, ON

Freshwater Data

Canadians stressed that availability and access to high quality data is critical to effective decision-making on all freshwater issues in Canada, including adaptation to climate change.

Context

Along with freshwater science, data and information are paramount to supporting evidence-based decision-making. The growing volume of data and advancements in analytics open new freshwater management possibilities. Many initiatives are in place to collect and share data and information on freshwater quantity, quality, use and demand. ECCC, AAFC, NRCan, DFO, Parks Canada, Statistics Canada, and other federal departments provide more than 1,000 datasets on the Open Data website.

What We Heard

Data featured prominently in the input received from a majority of participants. Comments frequently underscored the importance of access to reliable freshwater data through increased sharing and access to open data.

A significant number of participants highlighted the need for a strategy to support a more integrated, coordinated and standardized approach to data collection, management and sharing. Several suggested national standards, consistent methodologies, and defined operating procedures and protocols are needed to increase the reliability of freshwater data, and to enable interoperability of datasets collected by different organizations. Others suggested data standardization could help advance community-based monitoring by ensuring data quality, compatibility, harmonization and interoperability. A number of participants also stressed that appropriate and respectful inclusion of Indigenous Knowledge should be given special consideration in development of a data strategy.

Many participants voiced support for a central data hub or data portal to increase efficiency in freshwater data access.

Satellite technologies and advances in remote data collection and analytics were noted as aids to freshwater decision-making and management, as were automated data collection, open-sourced data management tools, big data analyses, machine learning tools and artificial intelligence. Together, these technologies can improve forecasting and support predictive modelling, participants said. It was also recommended that stakeholders be provided with training and support to use new technologies.

Several participants raised the importance of ensuring internet and satellite connectivity for sharing and accessing data.

Participants said:

"...there's a need for a consistent methodology, especially in terms of data collection, and accessible platforms for sharing data, with open standards training for stakeholders, as data collected can be used to make policy decisions to protect our water..."

"Coordinating centralized data repositories across boundaries is critical. Ensuring that the data are interoperable across these different jurisdictions is an important part of this."

"Data sets emerging from earth observation satellites are heavily underutilized and could lead to significant advancements in national scale freshwater science, from hydrology, water quality, lake hydrodynamics, climate impacts."



Lake Charlotte, NS

Transboundary freshwater management

Canadians told us enhanced collaboration between jurisdictions is essential to managing and protecting shared waters.

Context

Three-quarters of Canada's 25 major basins cross provincial or territorial boundaries. Nine share waters with the U.S., more than 40% of the frontier between Canada and the U.S. runs through shared water, and over 300 lakes and rivers cross the international boundary. Transboundary water management can be complex, as decisions made in one jurisdiction can have significant impacts on another.

What We Heard

Participants recommended a collaborative approach to transboundary freshwater management between all levels of government, including Indigenous governments. They suggested that boards responsible for overseeing transboundary freshwater management include or engage with experts in order to collaborate on solutions to pollution problems and other freshwater issues.

Access and sharing of standardized, harmonized and interoperable data was noted as critical to effective management and protection of transboundary waters, as was investment in long-term data collection to evaluate change over time and as new issues emerge. Participants also recommended cooperative transboundary climate change modelling and scenario development, and several stated that data sharing between jurisdictions could strengthen transboundary agreements and help to identify and address priority transboundary freshwater issues such as the impacts of climate change.

Participants highlighted the need for clarity on differences between jurisdictions in laws, regulations and policies that affect decisions in transboundary waters, and to identify and address inconsistencies that can contribute to challenges in transboundary freshwater planning and coordination.

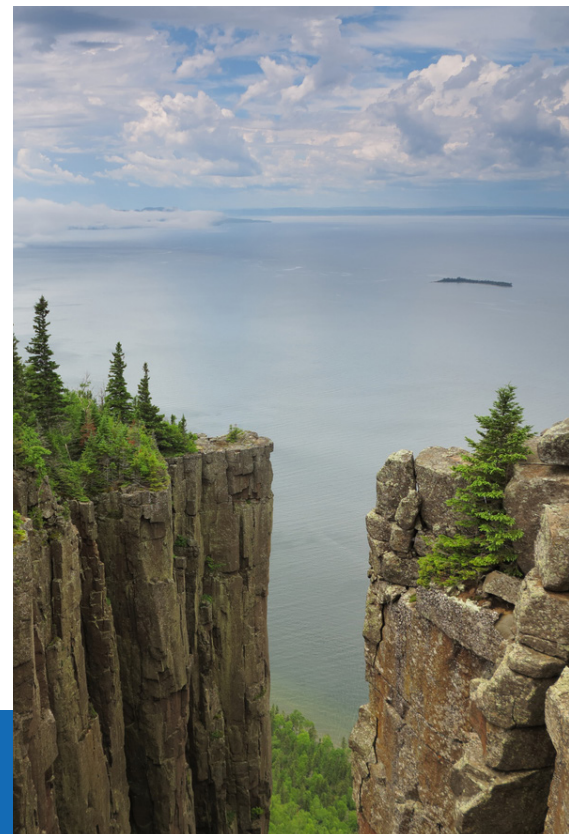
Participants advocated for increased involvement of Indigenous Nations and governments in transboundary freshwater management and decision-making. It was also suggested that financial and technical support be provided to support their involvement.

Participants said:

"Water knows no political boundaries: its stewardship requires interjurisdictional cooperation and collaboration."

"Support from the CWA could be offered in the form of freshwater management planning, data collection, and analysis tools that also aid in informing "bigger picture" national approaches."

"The CWA could facilitate interjurisdictional agreements to collect and harmonize nationally significant datasets and better link information holding across the country and improve our common understanding of this shared resource."



Freshwater technology, innovation and infrastructure

Canadians agreed investment in technology, innovation and infrastructure are essential to addressing freshwater challenges.

Context

Water technologies and infrastructure mitigate freshwater pollution, provide drinking water and wastewater services, improve freshwater conservation, and help manage extreme water events. Federal government support for research, development and adoption of freshwater technologies includes Sustainable Development Technology Canada; NRC's Industrial Research Assistance Program; NRCan's Clean Growth Programs; and AAFC's Clean Technology Program. The federal government supports investments in water, wastewater, stormwater infrastructure and natural infrastructure, through the Investing in Canada Infrastructure Program, the Disaster Mitigation and Adaptation Fund, the National Disaster Mitigation Program, the Canada Infrastructure Bank, the Green Municipal Fund and the First Nations Water and Wastewater Infrastructure on Reserves Fund.

What We Heard

Participants emphasized the importance of developing climate-proof and climate-resilient infrastructure. As well, developing suitable infrastructure and technologies to address freshwater issues in Northern areas and Indigenous communities was identified as a priority.

The state of aging freshwater infrastructure was highlighted as a concern, while other participants underlined the importance of investing in innovation, such as water reuse technologies. A number of participants stressed the need for enhancing "natural infrastructure" — nature-based ways to improve climate resiliency and control pollution.

Given the widely differing infrastructure needs and requirements of communities across Canada, a "one-size-fits-all" approach to technology and innovation is not applicable, said some participants. The infrastructure needs of remote, small and Indigenous communities were highlighted for special attention, and it was suggested that a prioritizing of infrastructure needs in each region would be helpful.

Participants also underscored the importance of sharing information, experiences and solutions among communities and regions with similar freshwater challenges.

Collaboration in freshwater technology development should be a priority, including collaboration between jurisdictions, and sectors, we were told. An information sharing platform, where technology users and developers could network, share data, best practices, decision-making tools and modern digital infrastructure and architecture models, was identified as an important opportunity to facilitate collaboration and accelerate research and development.

Participants said:

"One area of opportunity for the future CWA is as a hub of technology and innovation. Sharing lessons learned from Indigenous, local, regional, and provincial and territorial jurisdictions can help accelerate innovations for water resiliency across Canada."

"The Canada Water Agency should also provide overarching coordination and guidance for freshwater technology development by engaging across federal departments, provinces and territories, municipalities, and with Indigenous peoples, academia, sector representatives, nongovernmental organizations and others to identify new and emerging priorities for technology advancement."

"Stable, reliable and resilient infrastructure will be critical to combat the impacts of climate change."



Berry Head Pond,
Gros Morne National Park, NFLD

Engaging Canadians in managing and protecting fresh water

Canadians told us they value freshwater and want to do their part to help manage and protect Canada's freshwater resources.

Context

Canadians care deeply about fresh water. There are successful citizen and community engagement models nationwide, ranging from initiatives to better understand the state of local waters to monitoring and on-the-ground stewardship activities to protect freshwater ecosystems.

What We Heard

Participants emphasized the importance of increasing information on the state of Canada's freshwater to build awareness of challenges and how Canadians can contribute to solutions. Regular forums to encourage networking and information sharing among stakeholders, both within and between regions, were also suggested.

Participants also told us that Canadians want to be engaged in freshwater science and stewardship activities, including through citizen science and community-based efforts. Many non-governmental organizations across the country are already supporting freshwater science, education, engagement, and stewardship of freshwater resources. We heard that it is important to recognize the important role these organizations play and seek opportunities to support, leverage and build on their initiatives and expertise.

Participants noted that enhancing community-based water monitoring programs, including support for monitoring by Indigenous communities, is an efficient and effective way to support the growing need for freshwater data and to fill information gaps in rural and remote areas where government and academic research and monitoring are limited.

To help build capacity to engage in science and stewardship activities, some participants told us organizations would benefit from greater access to scientific expertise and technical training, as well as long-term sustainable funding.

Participants said:

"Throughout Canada, there are active networks of local communities, government agencies, Indigenous nations, industry, academia, community groups and local institutions who are working to research, monitor and respond to freshwater issues...Bringing these distributed efforts together by tapping into, stitching together and broadening impacts will be key to the Canada Water Agency's ability to deliver solutions to the challenges ahead."

"We need to build and capitalize on the efforts of community based water monitoring."

"A CWA could contribute... by facilitating the integration of long-term monitoring data with community-based monitoring work to provide the most detailed coverage available at the local and regional levels."



Governance considerations

Canadians shared perspectives on governance considerations for the CWA, highlighting models for watershed-level management, freshwater governance between different jurisdictions, involvement of Indigenous peoples, as well as inclusion of subject-matter experts.

Context

Federations like Canada are more likely to have sub-national governments with freshwater management responsibilities. A wide range of factors beyond a country's constitutional division of powers also determine countries' freshwater management organization; there is no single, common model. In considering the structural and operational design of a CWA, it is important to keep in mind the Canadian context.

What We Heard

We heard from participants that a CWA should promote a holistic, collaborative and integrated approach to freshwater management, characterized by a whole-of-government approach at the federal level, and by effective collaboration and engagement with provinces and territories, Indigenous governments and rights-holders, water users, stakeholders and the public.

We also heard that a CWA must have a well-defined mandate and focus so that progress is made on addressing the most pressing freshwater management challenges in Canada.

Participants told us that a CWA must be responsive to differences in freshwater priorities and management challenges in different regions of Canada, and engage regional freshwater experts, stakeholders and the public.

We also heard that many freshwater issues are best addressed on a watershed basis and that the CWA should build on and support existing watershed based initiatives, including those focused on the management of transboundary waters shared between provinces and territories and between Canada and the United States.

Participants said:

"The CWA should provide a national interdepartmental coordinating body along with offices and liaisons across Canada...to facilitate regional engagement and ensure watershed-specific issues are prioritized."

"...the governance model of a future CWA must build from a foundation that considers local context, perhaps through engaging existing mechanisms like watershed groups, and consider the inherent transboundary nature of water."

"...the Agency should have a clearly defined and distinct mandate and structure to deliver on Canada's freshwater objectives without encumbering the federal and provincial approaches that already exist."



Mackenzie River Delta, NWT

7.0 Conclusion

Canadians provided invaluable advice on the most pressing freshwater issues facing their regions and the country, which opportunities the federal government should pursue to enhance freshwater management, which are the highest priorities, and how a federal CWA might help.

You shared with us your strong support for all freshwater objectives presented in the discussion paper, and identified the following as your top five priorities:

- Federal policies to promote effective management and protection of freshwater resources and ecosystems in Canada for 21st century challenges and beyond – including adapting to climate change.
- Data and information are available to support informed decision-making at all levels.
- Canadians are actively engaged in managing and protecting fresh water.
- Indigenous peoples play an increased role in management of Canada's fresh water.
- Canada has and applies cutting edge science to tackle the freshwater challenges of the next century, including climate change.

We heard you, and we better understand your perspectives.

Environment and Climate Change Canada is grateful to everyone who took the time to share their feedback. By generously offering your time and sharing your passion for the protection and sustainable use of freshwater, Canadians provided valued input and advice on how to keep freshwater clean, safe and well managed, now and in the future.

The Government of Canada reaffirmed its commitment to establish the Canada Water Agency through Budget 2021, which allocated \$17.4M to this work.

Your input will inform on-going dialogue with provinces, territories, Indigenous peoples and others on ways to work together to improve freshwater management in Canada through the creation of a new CWA and to further protect large lakes in Canada.

Environment and Climate Change Canada looks forward to continuing to work together to make the CWA a reality.



Bow River, AB

Appendix 1: Regional Perspectives

In February, ECCC hosted six virtual Regional Freshwater Forums – Atlantic Canada, Quebec, Ontario, Prairie Provinces, British Columbia and Northern Territories – enabling over 1,400 Canadians to offer thoughts on key issues and challenges related to water within their respective regions and feedback on how a CWA might help.

The following sub-sections provide a high-level overview of the regional public and stakeholder perspectives heard.

Atlantic Canada

Panelists addressed key concerns around groundwater quality, changing conditions under climate change, and water pollution. They also identified open-access data and data sharing, specifically baseline ecological data, as key opportunities for the CWA. Supporting and improving collaboration between jurisdictions was also identified as an area of opportunity. Inclusion of Indigenous communities and knowledge in freshwater management was raised.

During forum breakout sessions, we heard from participants that sharing information and improving data accessibility were valuable, that the CWA could act as a hub for consolidating and standardizing data, and that it could convene regular freshwater conferences for sharing information and innovations. In many groups, participants highlighted improving the public's understanding of water and a need to change our collective attitude toward water as important objectives.

Concerns in the breakout sessions included agriculture and industry-related contamination of water and impacts from climate change. Natural and engineered infrastructure to protect both communities and ecosystems from flood risks and from industrial accidents were areas of need discussed, as was the need for groundwater quality data and mapping.

A common discussion point across several breakout groups was the need to understand cumulative impacts on freshwater, including research that supports an integrated watershed approach. Conversations explored the need for a holistic view of freshwater resources, including understanding the many stressors, competing uses, increasing demands, land-use practices, and climate change. Some participants proposed increasing the authority of regulators.

REGIONAL PANEL OF EXPERTS

Dr. Patrick Kiely
SENTRY

Angela Banks
PEI Watershed Alliance

Dr. Norm Catto
Memorial University of
Newfoundland

Dr. Michelle Gray
Canadian Rivers Institute,
University of New Brunswick

Quebec

Panelists identified climate change impacts and adaptation as the province's most significant water challenges, and discussed the issue of inadequately adapted technology. They also highlighted safe drinking water for all Indigenous communities as a top priority. Panelists discussed the need for increased awareness of water issues and personal responsibility among the general public. They identified the need for additional hydrometric and meteorological monitoring and flood forecasting, as well as gaps in data coverage. Panelists also suggested that the CWA could play a key role in education and supporting collaboration between freshwater organizations.

Centralized data management was identified by forum panelists as a key longer-term opportunity for the CWA. Three noted areas of opportunity for the CWA were: making local freshwater, including groundwater, balance models available, establishing guidelines for monitoring, and supporting optimization of knowledge and collaboration between disciplines. Panelists also discussed the CWA's role in supporting inclusion of Indigenous peoples and communities in freshwater-related decision-making.

In the breakout sessions, increasing public education and engagement in freshwater were identified as priorities. Data and forecasting related to climate change impacts were identified as key gaps in current information and capabilities. Recognition of and opportunities to build on the work of existing organization and initiatives was also discussed. A common theme across the breakout discussions was the potential for the CWA to establish a comprehensive and harmonized process for collecting, analyzing and sharing data.

Concerns noted in the breakout sessions included a lack of coordination between levels of government, and many suggested the CWA work to improve communication and collaboration between entities working on freshwater management. They also suggested that any federal efforts apply a regional approach to implementation due to the size and various landscapes in Canada. Groups suggested the CWA create standards and recommend methodologies but must also focus on supporting community-based solutions.

The need to address ageing infrastructure as well as to build new infrastructure resilient to climate change and appropriate for increased population growth and urbanization was also highlighted by breakout groups.

REGIONAL PANEL OF EXPERTS

Jean Cinq-Mars

Co-chair of the Great Lakes and St. Lawrence Collaborative & Quebec Sustainable Development Commissioner
2009-2016

Sonja Behmel

WaterShed Monitoring

Dr. Marie-Amelie Boucher

Université de Sherbrooke

Dr. Philippe Gachon

Université du Québec à Montréal

Ontario

Panelists identified water quality as Ontario's greatest freshwater management challenge. Concerns included nutrient runoff, algal blooms, inadequate wastewater treatment, and the loss of wetlands and the natural filtration services they provide. They also noted pressures due to urbanization and the need for more groundwater data, floodplain mapping and, to support urban planning, predictive models that consider climate change. Also discussed: a more holistic approach, particularly in terms of managing Great Lakes ecosystems and watersheds.

Panelists and breakout groups talked about the need for greater collaboration on data, and also on leveraging expertise, resources, funding, and research. Also identified as an important role for the CWA was the provision of long-term support and collaboration to ensure water data and metadata is centralized, cohesive, and standardized, with long-term monitoring support provided.

In breakout sessions, water quality issues and restoring Great Lakes' health were highlighted as priorities. Many groups also expressed concerns about flood risks, the effects on communities, and the need for resilient infrastructure.

A common topic of discussion: increasing resources for coordination and communication between levels of government, local organizations and regional non-government initiatives.

Breakout groups highlighted Indigenous communities' involvement in leadership roles in water management, with formalized working relationships and dedicated funding to build capacity for more effective participation by Indigenous peoples.

REGIONAL PANEL OF EXPERTS

Gord Miller

Great Lakes and St. Lawrence Collaborative

Dr. Dawn Martin-Hill

McMaster University

Lou Di Gironimo

Toronto Water

Dr. Nandita Basu

University of Waterloo

Prairie Provinces

Panelists identified floods, drought and climate change as the region's key freshwater issues. They noted gaps in weather and hydrologic forecasting and climate modelling, particularly in rural and agricultural areas, and overall lack of regional surface and groundwater monitoring. They also noted the loss of wetland areas and nutrient loading to waterways as concerns, and the challenge posed by an increasing demand on limited freshwater resources.

Panelists highlighted the Indigenous perspective and way of life in relation to land and water, and that Indigenous communities need to be partners in water management. Opportunities were highlighted around nature-based solutions and for supporting the role of Indigenous knowledge in innovation and best practices for water management.

Key opportunities and essential roles for the CWA noted by the panel members included collaboration and inclusion of stakeholders in watershed management and planning. Panelists suggested the CWA support investments in water management, including infrastructure to prepare for future freshwater challenges due to climate change. Also discussed by panelists were ways to mitigate difficult trade-offs between economic development, healthy aquatic ecosystems, and safe drinking water. They identified sharing of best practices, joint decision-making between sectors, learning from innovations in other countries, and incentives for efficiencies as important to meeting freshwater challenges. Other suggestions included strong regulations for industries that significantly impact water, support for innovation and for implementing best practices, and collaborative planning to ensure reliable water for various needs.

Breakout group concerns included the impacts of climate change and future availability of water for agriculture and possible effects on Canadian food security. Concerns about over allocation of water resources and about industries' effects on freshwater were also often expressed.

Participants noted how challenging it is to navigate the federal government's many departments and the layers of other regional governments with jurisdiction over freshwater. Highlighted as opportunities for the CWA included the need for communication and support for sharing information between groups and jurisdictions, information collection and dissemination, and data coordination and centralization.

REGIONAL PANEL OF EXPERTS

Kim Sturgess
WaterSMART Solutions

Grand Chief Jerry Daniels
Southern Chiefs Organization

Dr. Danny Blair
Prairie Climate Centre,
University of Winnipeg

Aaron Gray
Saskatchewan Irrigation
Projects Association

British Columbia

Panelists discussed climate change implications for freshwater, water as central to reconciliation with Indigenous peoples, and the importance of balancing the ecological needs for water with human needs. Concerns were voiced about water supply, particularly climate change-related unreliable snowpack and summer shortages, and the possibility of over allocation of water resources given the lack of data on the cumulative extent and availability of these resources (e.g. surface, ground and aquifer). They also expressed frustration over the lack of coordination on freshwater issues, from grassroots organizations to government, and on the complexities of understanding and navigating jurisdictional responsibilities for water management. Panelists also noted increasing concerns over ageing urban water infrastructure and impacts to water quality related to urban stormwater runoff and sewer system overflows.

Suggested opportunities for the CWA included supporting greater engagement and dialogue between entities involved in water management; compiling, centralizing and maintaining data from across the country; and ensuring the information is verified and easily accessible.

Breakout group discussions identified the need to understand the required minimum streamflow and seasonal flow patterns for ecosystems and aquatic life. They also highlighted that land-use planning and water management are disconnected, and that the CWA could address this issue. Concerns about industry effects on freshwater were expressed, particularly open-pit coal mining. Breakout groups also suggested a need for more green infrastructure funding designed for low-cost operations, and an increasing need for nature-based solutions for flood control, sediment management, and pollution.

Many breakout groups also discussed the importance of involving local groups, Indigenous governments, and stakeholders in freshwater management and decision-making. It was noted that ensuring each group understands where and how they can provide input or objections to decisions builds trust in the collaborative process and in decision-making.

The groups emphasized that water quality and quantity data and predictions should be used to inform decision-making, and that the CWA could play a role here. Supporting better data collection, information storage, collaboration and information dissemination were also identified as key roles for the CWA.

REGIONAL PANEL OF EXPERTS

Dr. Markus Schnorbus
Pacific Climate Impacts Consortium

Chief Harvey McLeod
Upper Nicola Band

Kat Hartwig
Living Lakes Canada

Melina Scholefield
City of Vancouver

Northern Territories

Panelists identified climate change as the biggest challenge currently facing the North. They also noted the need for improved prediction capacity and flood forecasting to help communities prepare for and adapt to changing conditions. Groundwater data and mapping was identified as a significant gap. They also highlighted the importance of water monitoring and making the connection between data and information and its audience. Monitoring was noted as important to food security, travel, forecasting, and community water management decisions. Panelists raised the difficulty of monitoring across the North's vast geography and disperse populations, and highlighted the importance of community-based programs in addressing this challenge.

Panelists and breakout group participants identified challenges related to lack of capacity and resources. Factors noted included small community sizes, limited municipal resources, lack of easily-accessible training and capacity building, and the sheer scale of land and water to be monitored and managed. Breakout groups also highlighted the need for a centralized and accessible hub for sharing water and land data and information from across the region.

Panelists and breakout groups pointed to the Mackenzie River Basin as a good example of effective, formal transboundary watershed management. They also noted that many water challenges in the North are directly connected to governance, legislation, and reconciliation with Indigenous peoples. It was stressed that ongoing work in Northern Canada on water co-governance between Indigenous governments and local, provincial or federal government can be used as a model for the rest of Canada.

Breakout group discussions highlighted the high importance of using and acknowledging Indigenous knowledge for freshwater management. Participants suggested the CWA could lead and support a necessary shift in attitude toward water to one that is more holistic and ecosystem-focused, acknowledging water as a highly valued and shared resource.

REGIONAL PANEL OF EXPERTS

Heather Jirousek

Yukon Dept. of Environment

Pauly Sias

Dan Keyi Renewable Resources Council

Karen Kharatyan

Nunavut Water Board

John MacDonald

NWT Dept. of Environment and Natural Resources