

Canada's Input on the Six Interactive Dialogue (ID) Themes of the 2026 United Nations Water Conference

A constant supply of clean water is essential to power our economy, support our quality of life, and sustain our environment. It is integral to Canada's national identity and is sacred to many Indigenous Peoples.

In this context, Canada fully supports the aims of the United Nations (UN) Water Conference and is supportive of an inclusive process that acknowledges and incorporates the needs and perspectives of all peoples.

At this early stage in the process, the Canada Water Agency (CWA) has sought input from the federal government and is submitting the resulting input. Canada hopes to encourage and support opportunities for input from other stakeholders across government and civil society as the UN Water Conference process progresses.

ID1: Water for People: Focusing on the human rights to water and sanitation for healthy societies and economies. It addresses access for vulnerable populations.

Relevant Status and Trends

- Canada's progress toward Sustainable Development Goal (SDG) 6 (Ensure availability and sustainable management of water and sanitation for all) is underpinned by published policies and programs that advance equity for Indigenous Peoples and other vulnerable communities.
- Canada integrates Sex- and Gender-Based Analysis Plus and the [Right to a Healthy Environment](#) into drinking water guideline development and water policy, addressing intersectional barriers for women, girls, Two-Spirit, and gender-diverse Peoples, and recognizing the leadership and ceremonial roles Indigenous women hold in water stewardship.
- Since 2016, Canada has invested more than \$5 billion in 1,545 water and wastewater projects, including 725 completed projects, benefiting 595 First Nations communities and approximately 481,000 people. These investments include new and upgraded treatment plants, lagoons, and system improvements.
- As of November 2025, 38 long-term drinking water advisories remained in 36 First Nations communities. Since 2021, 149 long-term advisories have been lifted, and over 320 short-term advisories were prevented from becoming long-term through infrastructure upgrades, operations support, training, and capacity building.
- In 2025, Canada announced \$2.3 billion over three years to improve access to safe drinking water on reserve, building on approximately \$7.1 billion committed since 2016 for First Nations water and wastewater infrastructure.
- Legislative foundations:

- The [United Nations Declaration on the Rights of Indigenous Peoples Act](#) (2021) requires proactive consultation and cooperation with Indigenous Peoples in federal decision-making, including water governance.
- Amendments to the [Canadian Environmental Protection Act](#) (2023) recognize the right to a healthy environment and strengthen protections related to pollution prevention and water quality, in alignment with the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP).
- Indigenous-led stewardship and nature-based solutions:
 - More than 240 [Indigenous-led Guardians](#) programs support land and water stewardship, ecosystem monitoring, and community capacity, contributing to flood, fire, and habitat resilience.
 - [Indigenous-led Natural Climate Solutions \(ILNCS\)](#) support watershed restoration, wetland protection, and nature-based water solutions rooted in Indigenous science and knowledge systems.
- Indigenous-led co-governance and legal innovations, including watershed protection initiatives and the recognition of legal personhood for culturally significant waters, are shaping rights-based and consent-driven water governance.
- Many northern and remote Indigenous communities continue to face challenges due to aging infrastructure, harsh climatic conditions, permafrost degradation, high operational costs, and legacy contamination. Canada is prioritizing culturally appropriate, distinctions-based infrastructure renewal in Inuit Nunangat, recognizing the deep spiritual, cultural, and practical connections Inuit have with water and ice.
- The forthcoming National Freshwater Science Agenda by the Government of Canada includes a dedicated chapter on Indigenous science, emphasizing co-development, Indigenous-led monitoring, and the respectful braiding of Indigenous and Western knowledge systems to support long-term, culturally grounded freshwater management.

Challenges and Emerging Issues

- A global decline in international assistance for water, sanitation, and hygiene (WASH) is slowing progress and reducing opportunities for international collaboration, even as global needs continue to grow.
- In Canada, ending long-term drinking water advisories remains a challenge with 38 long-term drinking water advisories in 36 First Nations communities in place in late 2025. The causes of these advisories are complex, requiring multi-year processes and sustained collaboration, technical solutions, operator training, and long-term operations and maintenance. Advisories are precautionary public health measures and may affect individual facilities or entire communities.

- Infrastructure gaps, limited local capacity, high operational costs, and harsh climatic conditions, particularly in Arctic and remote regions, continue to challenge access to safe drinking water and sanitation. Climate impacts such as permafrost thaw further strain systems.
- Fragmented governance and data systems across jurisdictions can undermine the effective realization of the human rights to water and sanitation.
- Despite legislative progress, significant barriers remain to fully realizing Indigenous Peoples' rights to water and sanitation, including the absence of clear and consistent mechanisms to operationalize free, prior, and informed consent in water-related decision-making.
- Extreme weather events, development pressures, and legacy pollution are increasingly stressing water quality and availability, compounding risks to water security and to the cultural integrity and well-being of Indigenous communities.
- Incomplete and fragmented freshwater data, including limited integration of Indigenous science and data sovereignty principles, constrain evidence-based decision-making and long-term water planning.
- Access to safe water and sanitation is closely linked to health (SDG 3), gender equality (SDG 5), and climate action (SDG 13). Addressing these challenges requires integrated approaches that recognize equity, cultural, and spiritual dimensions of water.
- Emergency-driven responses and accelerated resource development can risk undermining long-term watershed integrity if not aligned with rights-based, precautionary, and ecosystem-focused water governance.

Opportunities and Solutions

- Advance legislation to affirm the human right to access clean drinking water, aligned with UNDRIP and a rights-based approach to water and sanitation.
- Build on progress achieved through sustained investments in water and wastewater infrastructure, including through programs that support long-term service delivery.
- Expand Indigenous-led water governance models, such as water authorities, cost-sharing arrangements, and self-government agreements, that enable communities to design, manage, and deliver their own water services.
- Promote fit-for-purpose, decentralized, and renewable-powered drinking water systems tailored to small, remote, and climate-vulnerable communities to improve reliability and resilience.
- Scale Indigenous-led initiatives, to support watershed protection, wetland restoration, and community-based water monitoring.
- Strengthen training, certification, and peer-learning networks for water system operators and community-based monitors, including initiatives that increase participation of women and underrepresented groups in water-related trades.

- Combine regulatory tools, climate adaptation measures, and nature-based solutions to reduce flood, drought, and contamination risks while improving long-term WASH reliability.
- Use advances in forest and watershed science to improve prediction, management, and adaptation to changes in water quality and availability, including understanding the impacts of wildland fire and land-use change on drinking water sources.
- Apply the United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plan and Gender-Based Analysis Plus across WASH planning, budgeting, and evaluation, supporting leadership roles for Indigenous women, Two-Spirit, and gender-diverse Peoples.
- Encourage recognition of Indigenous water laws and explore protective legal constructs, such as legal personhood for culturally significant waters, guided by free, prior, and informed consent.
- Leverage existing monitoring programs and data platforms to support Indigenous-led water science, while respecting Indigenous data sovereignty and knowledge systems.

Recommendations and Conclusions

- Recognize safe drinking water and effective water services as fundamental human rights, consistent with UNDRIP and the human rights to water and sanitation.
- Support Indigenous-led water initiatives and governance models that enable communities to manage their own water services, grounded in self-determination and free, prior, and informed consent.
- Prioritize fit-for-purpose, climate-resilient water infrastructure for small, remote, northern, and Arctic communities, including system redundancy and sustainable operations and maintenance funding.
- Expand training, certification, and long-term retention pathways for local water system operators and community-based water monitors, including youth-focused and community-driven approaches.
- Align water-related budgets, legislation, and policies with UNDRIP and the right to a healthy environment, and track progress using indicators co-developed with Indigenous partners that reflect cultural and spiritual relationships with water.
- Expand Indigenous-led stewardship, monitoring, and restoration initiatives, and support data governance approaches consistent with Indigenous data sovereignty principles.
- Increase distinctions-based, rights-based investments in Inuit Nunangat water systems and housing-linked WASH upgrades that reflect the cultural, spiritual, and environmental significance of water.
- Encourage multijurisdictional collaboration across Indigenous, local, provincial, territorial, and federal governments to develop interoperable, publicly accessible freshwater information systems that respect Indigenous Knowledge Systems.

- Embed gender-responsive and socially inclusive approaches across all water programs, supporting leadership pathways for Indigenous women, Two-Spirit, and gender-diverse Peoples and recognizing their vital ceremonial and stewardship roles.
- Support Indigenous youth engagement in water stewardship and watershed management through mentorship and intergenerational knowledge-sharing to strengthen long-term water governance capacity.
- Work across jurisdictions and with partners and stakeholders to co-build interoperable, publicly accessible freshwater information systems that respect Indigenous science and data sovereignty and support SDG 6 tracking. This must include mechanisms for respectfully incorporating and protecting the spiritual and cultural dimensions of water within Indigenous science systems.
- Encourage efficient water-treatment technologies that meet the needs of small and remote systems.

Guiding Questions

- How can global frameworks better support Indigenous-led water governance?
- What examples exist globally of Indigenous-led water governance that could inform future models?
- How can Member States operationalize UNDRIP and human-rights-based WASH in national laws and budgets while respecting Indigenous laws and data sovereignty, including Indigenous protocols for knowledge sharing and environmental stewardship, and recognizing the inherent spiritual and cultural value of water?
- What models and funding instruments best scale Indigenous-led stewardship for measurable SDG 6 outcomes, while ensuring long-term sustainability and community control, and respecting the spiritual and relational connection Indigenous Peoples have with water?
- How should countries design gender-responsive, socially inclusive WASH programs that are distinctions-based and community-defined, and that honor Indigenous governance structures and cultural protocols, including the recognition of Indigenous women's spiritual roles in water stewardship?
- What governance and open-data standards enable cross-jurisdiction collaboration and transparent SDG 6 tracking, while upholding Indigenous data sovereignty and promoting equitable knowledge sharing, and ensuring the protection of Indigenous spiritual and cultural understandings of water?

Suggested Speakers

- **Minister of Indigenous Services:** To speak on rights-based WASH and reconciliation, including the recognition of water's spiritual significance in Indigenous cultures.

- **Indigenous Science Holder and/or Water Guardian/Indigenous Scholars (from a relevant region/nation):** To share insights on Indigenous laws, stewardship, and community-driven monitoring, embodying reciprocal relationships with water and speaking to its sacred dimensions:
 - Dr. Myrle Ballard (Anishinaabe from Lake St. Martin First Nation), Associate Professor, Canada Research Chair Tier II (Indigenous Science and Sustainability Science), University of Calgary.
 - Dr. Susan Chiblow (Anishinaabe from Garden River First Nation), Assistant Professor, University of Guelph.
 - Autumn Peltier, Chief Water Protector and Commissioner, Anishinabek Nation.
 - Sheila Watt-Cloutier (Inuk - Iqaluit, Nunavut): A renowned Inuit leader and environmental activist, Sheila Watt-Cloutier has been a global champion for the Arctic and its peoples.
 - Kimi Laursen (Inuk - Nunavut). A younger generation Inuit advocate, actively involved in environmental stewardship and has spoken about the importance of protecting Inuit waters and marine resources for cultural continuity and well-being.
 - Dr. Megan S. Adams (Métis - Red River Métis heritage, working with Central Coast First Nations). Dr. Adams' research on cumulative effects assessments and inclusive approaches is deeply informed by principles of respect for all aspects of the environment, including waters, and the rights and knowledge of Indigenous peoples.
 - Keepers of the Water (KOW). A network of Indigenous Traditional Ecological Knowledge holders and water protectors working across the Arctic Drainage Basin (Alberta, BC, Saskatchewan, Yukon, NWT, Nunavut). Focus: Indigenous water governance, Treaty-based stewardship, and advocacy for clean water. Contact: Executive Director - Jesse Cardinal — Keepers of the Water.
 - Seal River Watershed Alliance. Indigenous-led alliance in northern Manitoba advocating for watershed protection and co-development of conservation governance. Recognized for advancing Indigenous sovereignty and legal innovations in water stewardship. Contact: Stephanie Thorassie Appointed Executive Director — Seal River Watershed
 - Indigenous Guardians Program Representative. Guardians from First Nations, Inuit, and Métis communities who lead monitoring and stewardship of lands and waters. Program is nationally funded and documented as a cornerstone of Indigenous-led conservation. In this map, you can find different initiatives that have been funded through this program: [Indigenous Guardians Pilot map - Canada.ca](https://www.indigenousguardians.ca/map)
- **Canada Water Agency Leadership:** To discuss open freshwater data, partnerships, and integrated risk management, highlighting the importance of respecting Indigenous spiritual and cultural connections to water.

ID2: Water for Prosperity: Considering the water-energy-food nexus, and how to manage water resources efficiently for sustainable economic and social development.

Relevant Status and Trends

- Across Canada water demand is increasing across all sectors while climate imbalances persist. Canada's support for the energy transition through major investments in critical minerals and traditional energy projects, will contribute to greater demands for water, including groundwater.
- Canada is experiencing a general trend of increasing temporal and spatial variability in water supply across agricultural regions. Continuing to support sustainable water management within Canada's agriculture sector remains critical to ensuring Canada maintains its role as a global food provider and contributor to global food security. The agriculture sector is a significant water user dependent on sufficient quantities of high-quality water to remain competitive. Agriculture has long faced issues related to both water quantity and quality with differences across the country both regionally and locally.
- Changes in precipitation patterns and phases, shifts in the timing of water availability, and extreme weather associated with climate change will increase the need for enhanced water management in many regions across Canada. Canada's Agricultural Water Survey shows a 45% increase in total cropland irrigated from 2010 to 2024. While less than two percent of Canada's total farm area is irrigated (total of 959,526 hectares of land was irrigated in 2021), irrigation is vital to maintain production in key water scarce regions. For example, over two-thirds of irrigated land is located in southern Alberta. Changes in temperature and precipitation patterns will increase reliance on irrigation, notably across the Prairies and the interior of British Columbia where moisture deficits are greatest, but also in regions where there has not traditionally been a need to irrigate. Additionally, inadequate drainage poses significant challenges to farmers in many regions, particularly when it contributes to flooding, which is increasingly frequent due to extreme storms. Artificial drainage through surface and subsurface structures is needed to maintain fields for production when natural drainage is insufficient.
- Canada's electricity system is highly reliant on hydropower. From 2016 to 2022, Canada generated on average three-fifths (59.9%) of its total annual electricity from hydroelectric generating stations. For this reason, the supply, demand and trade of Canada's electricity systems are indelibly linked to weather. In 2023 Canada experienced its hottest summer on record and Western and Central Canada received below- or well-below-average amounts of precipitation, significantly impacting hydroelectricity generation resulting in an 8% decline (360 million MWh) in electricity generated.

Challenges and Emerging Issues

- Agriculture continues to be one of the sectors most impacted by climate change across Canada, which is intensifying the frequency and severity of extreme events. While farmers

across Canada have long managed weather variability, the changing climate presents new and compounding risks that increasingly challenge farm viability and productivity.

- Competition among water users is already a reality in Canada, and climate change is amplifying these pressures, affecting both the quantity and quality of fresh water. These combined impacts pose risks to Canada's water security, economic growth, and societal well-being. Effective adaptation to climate change requires watershed-based approaches that address region-specific water issues while balancing the needs of all sectors that depend on water. Despite progress, adaptation uptake in the agriculture sector remains uneven. Barriers include producers' financial risk, limited access to region-specific climate information, and insufficient extension services, namely to support the adoption of beneficial management practices (BMPs).
- Industrial demand for fresh water (including agriculture, critical minerals, data centres, etc.) is increasing in a context where water resources are less stable and scarcer.
- Increasing demand and use may also impact water quality (e.g., through mining) and exacerbate water-use conflict, impacting water quantity.
- Low-carbon energy sources (e.g., geothermal, hydroelectricity) rely on larger quantities of water.
- Northern and remote communities face disproportionately high costs for both water treatment and energy. Integrated water-energy solutions can improve system efficiency and create opportunities for jobs and businesses.
- Economic development strategies do not currently reflect the reciprocal relationship between communities and water, that should build resiliency through transparent and equitable allocation strategies recognizing water health as a shared resource essential to communities and to dependent sectors.

Opportunities and Solutions

- The Government of Canada continues to support strategies and practices that improve water management and water-use efficiency in agriculture, in addition to practices that reduce the risk of water contamination. Uptake and implementation of beneficial management practices (BMPs), adopting innovative tools and technologies, and investing in infrastructure that supports sustainable water management and improves climate resilience but requires technical and financial support. Federal-provincial-territorial programs under the [Sustainable Canadian Agricultural Partnership](#) (Sustainable CAP), including targeted funding that support climate change adaptation efforts are underway.
- Advance water-energy-food nexus solutions that integrate renewable energy and circular water use, such as wind/solar-powered community greenhouses that rely on recycled water. In parallel, the adoption of AI-driven leak detection and efficiency tools for cold climates can reduce water losses, lower operating costs, and improve performance.

Recommendations and Conclusions

- Integrated approaches to water management, with collaboration across all sectors and across scales and geographies, are increasingly essential to achieving sustainable water resources.
- The current dollar-per-litre valuation of water resources does not necessarily account for the intrinsic non-monetary water needs and uses, including water for nature and culture. Appropriate pricing could lead towards more sustainable use.
- Economic development strategies should reflect reciprocal relationships between communities and water, building resiliency and equitable allocation that recognizes water health as a shared resource in communities and dependent sectors.
- Collaboration across jurisdictions can accelerate innovation and the speed at which new technologies are adapted.
- Collaborate with Indigenous Peoples to develop watershed-level planning tools that integrate cumulative effects, environmental protection, and climate resilience.
- Indigenous values of water should be acknowledged and Indigenous-led governance supported alongside economic and technological solutions.

Guiding Questions

- How can governments and international partners ensure that proposed solutions do not impose large-scale, one-size-fits-all models on communities with different contexts and capacities?

ID3: Water for Planet: Highlighting the interconnections between water, climate, biodiversity, and the environment. This theme also addresses disaster risk reduction.

Relevant Status and Trends

- Canada highlights the growing interconnections between water, climate, biodiversity, and disaster risk, and the need for integrated approaches that reflect the accelerating impacts of climate change on freshwater systems.
- Climate change is reshaping the hydrological cycle, producing more frequent and severe floods, droughts, and deviations from historical baselines. Past hydrological data are no longer reliable predictors of future conditions, underscoring the need for adaptive, resilience-based planning rather than reliance on historical norms.
- Canada is integrating climate considerations into water quality guidelines and advancing new modelling and observational capabilities to assess freshwater availability. National efforts include applying existing modelling systems at scale, developing high-resolution tools for priority areas such as snow dynamics, and investing in satellite missions that improve monitoring of water-cycle variables.

- Forests, wetlands, and other ecosystems form the headwaters of most major waterways and play a critical role in carbon, nutrient, and water cycling. Long term research and monitoring continue to illuminate how forest change, climate impacts, and multiple stressors influence water quality and quantity from upstream sources to downstream communities. This science supports evidence-based ecosystem approaches to freshwater management.
- Canada's protected and conserved areas contribute to long-term preservation of fresh water and coastal biodiversity and support emerging source-to-sea approaches to watershed protection. There is increasing recognition of the importance of shared stewardship with Indigenous Peoples and the need for cross-sectoral data integration to improve decision-making. Indigenous Knowledge Systems provide essential insights into ecosystem health and climate resilience and can highlight both short- and long-term changes and trends.
- Water availability in agricultural regions is becoming increasingly variable. Irrigation demand is rising as precipitation patterns shift, with greater reliance on artificial drainage in areas where natural drainage is insufficient. Sustainable agricultural water management remains a priority, supported by Beneficial Management Practices, innovative tools, and infrastructure designed to enhance water-use efficiency and reduce contamination risks.
- Ecosystem services are not consistently incorporated into economic modelling frameworks.

Challenges and Emerging Issues

- Freshwater biodiversity and inland fisheries remain insufficiently reflected in global indicators, including SDG monitoring. Challenges in accounting for inland waters, such as their frequent inclusion within terrestrial reporting, complicate progress toward global targets, including the 30×30 conservation goal.
- Emerging contaminants and invasive species are adding complexity to already stressed freshwater systems, accelerating biodiversity loss and degrading water quality.
- According to the United Nations University's [*Interconnected Disaster Risks Report 2023*](#), two water-related Earth system tipping points, groundwater depletion and mountain glaciers melting, are approaching critical thresholds in many regions. Yet significant monitoring gaps persist in groundwater and cryosphere science.
- Climate change and increasing disturbances, including wildfires, pest outbreaks, drought, flooding, contamination, and permafrost thaw, are reshaping forest and watershed dynamics. Because land and water systems are tightly linked, changes in forest structure and soil conditions directly affect water quality, flow regimes, and ecosystem stability.
- Agriculture is among the sectors most affected by climate change, facing more frequent extreme events and greater variability in water availability. These shifting conditions challenge farm productivity and long-term viability.

- Competition for water is intensifying, driven by climate impacts on both water quantity and quality. These pressures create risks for water security, economic stability, and community well-being across regions.
- Despite immense possibilities associated with AI, the hyperscale data centers needed to support growing demand in AI consume a significant amount of water and energy.
- Adaptation uptake remains uneven. Producers and water users face barriers such as financial risk, limited region-specific climate information, and insufficient access to advisory services that support adoption of beneficial water and land management practices. Addressing these challenges requires watershed-based approaches that balance diverse sectoral needs.

Opportunities and Solutions

- Integrating ‘green water’ (in soil and vegetation) and the functions of restored ecosystems into global water discussions offers a pathway to advance nature-based solutions that strengthen biodiversity, stabilize landscapes, and enhance climate resilience.
- Forests, wetlands, and soils offer significant nature-based solutions for climate-resilient water systems for both mitigation and adaptation. Long term Canadian research demonstrates how healthy forested watersheds regulate flow, sustain water quality, and buffer against extreme events. Multi-decade ecosystem studies show how disturbances, such as wildfires, pests, and land-use change affect hydrology, informing restoration, risk reduction, and integrated watershed management. There are growing opportunities to invest in hybrid infrastructure approaches that integrate nature-based solutions with modern technologies, such as monitoring systems, modelling tools, and others to improve resilience, reduce long-term costs, and enhance long-term sustainability.
- Integrated forest-water research provides tools to inform sustainable development. Canadian research assesses how forest harvesting, wildfire, mining impacts, and other land-use practices influence downstream water availability, flood risk, and aquatic ecosystem health. Enhanced indicators of watershed change and improved drought and fire risk assessments support ecosystem-based water management.
- Integrating forest-water science into water governance supports early warning, improved modelling, and more effective climate adaptation. Advances in remote sensing, modelling of forest growth and water relations, and assessments of contaminant pathways can help track ecosystem change and inform decision-making across scales.
- Expanding access to detailed hazard information through national-scale flood mapping, geospatial data, and the use of emerging technologies such as machine learning to model flood susceptibility. These efforts support disaster risk reduction and climate adaptation planning across jurisdictions.
- Agricultural innovation offers scalable pathways to enhance water efficiency and resilience. Collaborative “living lab” approaches bring farmers, researchers, and communities together to test practices that reduce emissions, improve soil and water management, and strengthen

climate resilience. Research on advanced irrigation systems supports efficient freshwater use in water-scarce regions and accelerates adoption of beneficial management practices.

- Cold-region hydrology presents an important area for global partnership. Canada is developing new monitoring and modelling capabilities to strengthen resilience in snow and ice-dominated freshwater systems. These efforts present opportunities for cooperation with Nordic countries and mountain regions dependent on seasonal cryosphere-fed water supplies.
- Nexus-based approaches, such as Integrated Water Resources Management (IWRM), support more coherent decision-making across water, food systems, energy, and ecosystems. Addressing these linkages is essential to managing trade-offs, preventing unintended impacts, and promoting synergistic solutions across sectors, for both climate mitigation and for climate adaptation.

Recommendations and Conclusions

- Integrate water-climate-biodiversity strategies into National Adaptation Plans (NAPs), Nationally Determined Contributions (NDCs) and into planning in northern regions.
- Align programs and policies with the Kunming-Montreal Global Biodiversity Framework so that freshwater actions support its goals and targets and strengthen recognition of water's role across the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention on Biological Diversity (CBD), and the United Nations Convention to Combat Desertification (UNCCD).
- Enhance emergency preparedness for water-related disasters by strengthening and integrating forecasting into planning alongside building local capacity to predict, prepare and respond.
- Recognize that climate change disproportionately affects Indigenous water sources through flooding, drought, permafrost thaw, and ecological degradation.
- Strengthen scientific understanding of land-water interactions and improve protection of natural water-storing ecosystems, such as wetlands and peatlands, to build resilience to climate impacts and disturbances that are reshaping forest and watershed dynamics.
- Affirm that Indigenous Knowledge is essential to protecting and sustaining water sources.
- Indigenous stewardship and traditional ecological knowledge should be integrated in climate, biodiversity, and resilience strategies.
- Continue to explore investing in climate-resilient infrastructure and adaptation planning, co-developed with Indigenous Peoples and informed by regional conditions.

Guiding Questions

- How can governments strengthen climate resilience for communities whose water systems were not designed for rapidly changing environmental conditions?
- What governance models have proven most effective for long-term stewardship of source-to-sea freshwater biodiversity conservation at basin scale (including transboundary contexts)?

- What minimum set of interoperable indicators and data standards should be prioritized to enable basin-wide adaptive management and reporting?
- How can information on forest condition and change be better integrated into water resources management and forecasting to inform water security?

ID4: Water for Cooperation: Focusing on transboundary and international water cooperation, including scientific collaboration and inclusive governance.

Relevant Status and Trends

- Climate change is intensifying pressures on water security. Increased droughts will exacerbate water scarcity in many regions of Canada fueling competition for water between users and sectors.
- Climate-driven risks are increasing the importance of cross-border coordination. Within shared watersheds between countries that support major agricultural, ecological, and community systems it will be important to ensure that collaborative governance frameworks, regulatory approaches, and monitoring systems are contributing to effective long-term planning, irrigation management, soil health, and climate adaptation.

Challenges and Emerging Issues

- Jurisdictional and organizational barriers prevent a holistic view of the water cycle, which may impact its access and use by multiple actors. For example, surface water is often studied separately from groundwater.
- Many transboundary aquifers remain insufficiently characterized, making it difficult to include them in shared basin agreements.
- Freshwater monitoring networks are often spatially limited across Canada's vast landscape and can also lack the capacity to detect the cumulative impacts of forest disturbances and contaminants, influenced by multiple pressures, including climate and land-use change. Closing these gaps is essential to understanding ecosystem health, protecting water resources, and informing climate resilience.
- Diverging regulatory approaches across jurisdictions may increase water quality risks. Changes in environmental protection standards in jurisdictions could increase downstream pollution pressures on shared rivers, underscoring the need for robust bilateral monitoring, early warning, and sustained investment in ambient water quality programs.

Opportunities and Solutions

- Deepen international collaboration on authoritative data, interoperability, and governance frameworks through UN and multilateral fora. Expanded collaboration can improve early warning systems, crisis response, and water-related decision-making across jurisdictions.

- International mechanisms such as the World Health Organization’s work on drinking water guidelines provide an important platform for sharing scientific expertise and strengthening regulatory capacity. Continued collaboration can support countries in translating global guidance into appropriate drinking water protections. Canada contributes through the World Health Organization (WHO) Collaborating Centre on Environmental Health, where Canadian experts provide input into drinking water fact sheets and support the development of the WHO Guidelines for drinking water quality.
- Shared transboundary drought monitoring demonstrates the value of coordinated risk assessment. Scaling and replicating shared drought monitoring models can strengthen preparedness, support agriculture and ecosystem management, and improve anticipatory action in drought-prone regions. As is the case with Canada, national drought assessments feed directly into the North American Drought Monitor, a trilateral collaboration with the United States and Mexico. This partnership enhances coordinated risk assessment and supports agricultural, environmental, and emergency-management decision-making across borders. International initiatives such as the Internationally Shared Aquifer Resource Management (ISARM) program offer a foundation for jointly assessing and managing aquifers that cross borders. Strengthening shared hydrogeological data and monitoring can improve water security, reduce conflict risks, and support more comprehensive transboundary agreements.
- Forested landscapes contribute directly to drinking-water protection, climate adaptation, and ecosystem health. Enhancing understanding of these connections can support collaborative action on nature-based solutions and climate resilience.
- Strong shared science networks can inform cooperative decision-making. Advances in remote sensing, modelling, and cumulative-effects assessment provide new opportunities for joint understanding of long-term water availability and watershed trends. Strengthening mechanisms for sharing monitoring data and scientific expertise across jurisdictions can improve early warning, risk management, and evidence-based governance.
- Strengthened collaboration on agricultural water management. Research on drought-resilient crops, soil health, irrigation efficiency, and precision agriculture can be shared internationally to improve resilience within water-stressed agricultural regions. Joint research partnerships and producer-scientist collaboration models offer scalable pathways for climate adaptation and food security.

Recommendations and Conclusions

- Expand cooperation on transboundary aquifers including international initiatives such as the Internationally Shared Aquifer Resource Management (ISARM).
- Increase awareness of the links between forests, watersheds, and resilience by enhancing communication, education, and knowledge exchange on these connections to support collaborative action on nature-based solutions and climate resilience.

- Leverage shared science to inform cooperative decision-making and strengthen mechanisms for sharing data and expertise across jurisdictions and sectors, including Indigenous Nations to improve early warning, risk management, and evidence-based governance.
- Advance Indigenous inclusion and leadership in water governance. Recognizing Indigenous Peoples as rights-holders and full partners in local, transboundary and international water decision-making. Mechanisms for participation, knowledge-sharing, and free, prior, and informed consent are essential to ensuring equitable and culturally grounded cooperation.
- Strengthen multijurisdictional and cross-sector collaboration. Effective cooperation across national, regional, local, and Indigenous governments is critical for managing shared waters, reducing conflict risks, and supporting evidence-based decision-making. Inclusive governance structures improve coordination, transparency, and joint action.
- Enhance forest-water science and integrated modelling. Integrated models that link forest conditions, soils, and hydrology can strengthen forecasting capabilities and support climate-resilient water management across jurisdictions. Greater international coordination on long term monitoring, particularly in headwaters and groundwater systems, would improve global understanding of ecosystem change and cumulative effects.
- Strengthen collaboration and shared research on agricultural water management and promote cooperation on agricultural water security. Collaborative work on drought resilience, soil health, and sustainable agricultural water use is increasingly important as climate pressures grow. Innovation and knowledge exchange can support adaptation and food security across water-stressed regions.

Guiding Questions

- What are some best practices or success stories of building and coordinating long-term, national-scale forest water monitoring and historical datasets related to water quality, quantity, groundwater, snow, and soils that can support forecasting and evidence-based decision-making?
- Interoperability: In transboundary river basins, are our data standards (formats, metadata, vertical datums) compatible with our neighboring countries to allow for seamless cross-border flood warnings?
- What are the opportunities to strengthen intergovernmental coordination and information sharing to ensure climate-resilient water security?
- What international models of shared or co-developed governance best support Indigenous leadership on water?
- How can global frameworks better support Indigenous-led water governance?

ID5: Water in Multilateral Processes: Aligning water actions with broader goals such as Sustainable Development Goal 6 (SDG 6) and the 2030 Agenda for Sustainable Development.

Relevant Status and Trends

- The growing number of international water events and platforms reflects increased global awareness of water issues and challenges. At the same time, this proliferation highlights the need for greater coherence, coordination, and alignment across multilateral processes to avoid fragmentation, duplication, and ensure that resources and time are dedicated toward impactful efforts.
- At the 2023 UN Water Conference, Canada made voluntary commitments to the Water Action Agenda. These included commitments to implement a strengthened Freshwater Action Plan and to establish a Canada Water Agency.
- In 2023, the Government of Canada introduced legislation to fully establish the Canada Water Agency as a stand-alone entity, which came into effect in October 2024. [The Canada Water Agency](#) is now fully operational with a mandate to improve freshwater management in Canada by providing leadership, effective collaboration federally, and improved coordination and collaboration with provinces, territories, and Indigenous Peoples to proactively address national and regional transboundary freshwater challenges and opportunities.
- The Canada Water Agency leads most aspects of the [Freshwater Action Plan](#), which includes restoring and protecting water quality and ecosystem health in eight nationally significant waterbodies.

Challenges and Emerging Issues

- Progress toward achieving SDG 6 targets remains insufficient globally, and with limited time remaining to 2030, accelerated and coordinated multilateral action is needed to close SDG 6 gaps.
- Meeting the SDG 6 targets is crucial to the achievement of a number of other SDGs.

Opportunities and Solutions

- The timeframe for discussions on a post-2030 Sustainable Development Agenda is approaching fast, presenting an opportunity to refocus and recognize water for its central, cross-cutting role.
- Strengthened national coordination can support progress on SDG 6 and inform future global frameworks. For example, the Canada Water Agency is working across all the regions of Canada to advance SDG 6 targets, promoting collaboration and partnership on water challenges. The Agency works with provinces, territories, Indigenous Peoples, local authorities, scientists and others to find the best ways to keep our water safe, clean and well-managed for future generations.
- Multilateral health institutions remain essential platforms for advancing safe drinking water globally. Canada provides funding support to WHO through the International Health Grants

Program from the Public Health Agency of Canada. The grants strengthen public health regulation of drinking water services and promote new methodologies.

- Robust policy and legal frameworks for digital public infrastructure are important to achieving SDG targets. Through the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM), including its Working Group on Policy and Legal Frameworks for Geospatial Information Management, Canada has authored papers on data for the public good in the digital world, which looked at building robust policy and legal frameworks to establish digital infrastructure with available resources to advance progress towards SDGs.

Recommendations and Conclusions

- Acknowledge the significance of multijurisdictional collaboration across governments (national, provincial, territorial, municipal, and Indigenous) to advance shared future goals.
- Continue to advance commitments to SDG 6 through distinctions-based partnerships with Indigenous Peoples, while reinforcing the need to align global objectives with the implementation of UNDRIP and the advancement of self-government.
- Indigenous leadership in global water governance should be recognized, and Indigenous Knowledge should inform SDG reporting and multilateral processes.

Guiding Questions

- How can UN member states ensure that progress toward SDG 6 aligns with UNDRIP, particularly Articles related to rights to lands, resources, health, and self-determination?

ID6: Investments for Water: Concentrating on financing, technology, innovation, and capacity-building to support global water initiatives.

Relevant Status and Trends

- Canada is home to a world-leading clean technology sector with over 2,400 firms developing and deploying innovative environmental solutions globally. These firms contribute approximately \$81 billion per year in economic activity, which is about 3% of Canada's GDP, supporting more than 350,000 jobs across the country.
- At the same time, Canada notes ongoing gaps in funding for local monitoring, stewardship, and culturally grounded water programs, which limits long-term community resilience and the ability to scale nature-based or Indigenous-led water management approaches.
 - This challenge reflects a broader global financing gap: the World Bank estimates that up to \$7 trillion in investments will be needed by 2030 to meet water-related SDG commitments, which highlights the scale of underinvestment relative to current financing levels.

Challenges and Emerging Issues

- The global shift toward a low-carbon economy is accelerating demand for innovative water technologies, including advanced treatment, filtration, monitoring, and efficiency solutions. Many Canadian clean technology firms, particularly small and medium-sized enterprises, face significant capital requirements, long commercialization timelines, and difficulty securing first-time adopters to de-risk future investments and scale up globally.
- Advanced digital tools such as AI, high-performance computing, and integrated modelling offer substantial potential but require reliable, high-quality datasets across hydrology, geoscience, and climate systems. Current data gaps constrain the full value of these technologies. There is a decline in the engineering and geoscience workforce, which could limit institutional capacity to address complex water challenges, reinforcing calls from the 2023 UN Water Conference to expand global water education and training networks.
- While new technologies can support SDG 6 and SDG 13, hyperscale digital infrastructure, including large data centers supporting AI, requires significant water and energy resources and may introduce new pressures on local water availability.
- Despite growing recognition of water's central role in climate resilience and economic stability, many water investments face persistent barriers related to regulatory uncertainty, limited project-preparation capacity, and weak enabling environments, which constrain the ability to mobilize and scale public and private financing.
- Investment decisions must prioritize water health, community resilience, and long-term sustainability, ensuring financing approaches remain grounded in the economic, social, and cultural realities of the communities they serve.

Opportunities and Solutions

- Stronger enabling environments, through project preparation, clearer regulatory frameworks, and technical assistance, can reduce investment risk and help mobilize blended and private financing for water.
- Water technology innovation offers scalable solutions for global water security. Canada has over 500 water technology innovators working to ensure safe, reliable, and sustainable access to water for drinking, sanitation, agriculture, and industry. These technologies illustrate approaches that can be adapted and deployed internationally, including:
 - Closed-loop cooling systems capable of reducing water consumption by up to 95% in sectors such as commercial buildings, power generation, and data centres.
 - Desalination technologies, such as membrane, thermal, and nanofiltration systems, which provide new freshwater sources while reducing the need for groundwater or surface water withdrawals.

- Direct Lithium Extraction (DLE) processes that use 96% less water than traditional lithium extraction by removing lithium from brines through advanced sorbents and resins.
- AI-enabled optimization tools that improve the performance of water and wastewater treatment plants, reduce energy use, detect leaks, and support precision irrigation through soil-moisture monitoring.
- Deacidification technologies that increase river alkalinity to convert dissolved CO₂ into bicarbonate for stable storage in oceanic reservoirs.
- Strengthened digital and geospatial governance can support water decision-making at scale. Canada contributes to global digital governance related to water and sustainability. Under the UN Committee of Experts on Global Geospatial Information Management, Canada has co-authored work on the future geospatial information ecosystem, including the role of AI and digital innovation in supporting SDG monitoring and water security. This work highlights opportunities to use AI and digital innovation to improve SDG monitoring, early warning systems, and water security planning across countries.
- International market access can accelerate innovation. Canadian-supported missions help connect cleantech innovators with international partners seeking solutions in areas such as fossil fuel reduction, wastewater treatment, and industrial water efficiency. These missions facilitate targeted business-to-business (B2B) engagements and pilot and demonstration projects, enabling companies to validate and adapt technologies under real world conditions while building long term international relationships.
- Global observational and modelling capabilities offer major opportunities.
 - The GRACE (Gravity Recovery and Climate Experiment) satellite mission provides regional to continental assessments of total water storage, helping close data gaps where ground-based monitoring is limited.
 - Advances in computing, including AI-enabled integrated modelling, support more sophisticated nowcasting and forecasting of surface water-groundwater-atmosphere dynamics.
 - Canada continues to emphasize investments in high-performance computing and integrated science to enhance predictive capacity and inform water security planning.
- Strengthening the talent pipeline is essential. Canada sees benefits in coordinated efforts across governments, industry, and academia to attract and retain a new generation of scientists, engineers, hydrologists, and geospatial specialists.

Recommendations and Conclusions

- Engage multilateral platforms to identify priority water challenges and connect solution providers with governments, utilities, and industries. Match-making initiatives can help accelerate the deployment of clean technology solutions.

- Provide direct funding and long-term capacity-building for Indigenous-led water institutions, operator-training programs, and collaborative research partnerships. Investments should support full lifecycle costs, including operations and maintenance, operator training, asset upgrades, and water system modernization.
- Explore innovative financing models that help communities address funding gaps, including options that leverage predictable federal transfers and low-interest financing while ensuring local priorities and cultural contexts guide decision-making.
- Sustained investment in hydrology, geoscience, and digital water technologies is essential to support innovation, climate adaptation, and governance. Training the next generation of scientists, including through diversity-focused programs, will help ensure capacity to meet increasing global water challenges.
- Strong collaboration across national, subnational, and Indigenous governments improves coordination, narrows data gaps, and accelerates innovation. This is essential to deliver equitable, climate-resilient, and sustainable water services.

Guiding Questions

- How can water technologies, such as desalination, smart water monitoring, and wastewater recycling, be scaled globally to strengthen water security, while balancing affordability, environmental sustainability, and equitable access for communities most at risk of scarcity?
- What role can international funding bodies play in supporting long-term institutional capacity rather than short-term project-based training?
- What mechanisms are needed to facilitate the advancement and uptake of technical tools and datasets given varying capacities between regions?