

A briefing for the

**House of Commons Standing Committee on Environment and Sustainable Development
Study on Freshwater**

submitted by

**James Famiglietti
Executive Director, Global Institute for Water Security
University of Saskatchewan**

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1. Introductory information

a) Which issues related to protecting and managing freshwater does your organization work on?

The Global Institute for Water Security (GIWS) at the University of Saskatchewan (USask) is home to the top-ranked freshwater research program in Canada. GIWS researchers work on a wide range of issues, including improving predictive models for forecasting flooding, drought, streamflow and water availability; the ecology, hydrology and biogeochemistry of the Saskatchewan River basin, from its mountain headwaters, across the prairies, to its delta; the impacts of climate change on Canadian water security; the food-water nexus (i.e. linkages between food and water security); the ecotoxicology and water quality of Canada's surface waters; and the quality and quantity of Canada's groundwaters. Furthermore, GIWS is deeply engaged in transdisciplinary research with a variety of stakeholders, and it has several research partnerships with Indigenous communities.

GIWS also leads the pan-Canadian university research network, the Global Water Futures (GWF) program, with primary partners McMaster University, the University of Waterloo, and Wilfrid Laurier University. The primary objectives of GWF are to position Canada as a global leader in water science for cold regions, and to address the strategic needs of the Canadian economy in adapting to change and managing risks of uncertain water futures and extreme events.

2. Interaction and collaboration with federal departments and agencies

a) Does your organization interact with federal departments and/or agencies on freshwater issues? If so, on which issues and with which departments and/or agencies?

GIWS has a long history of interacting with federal agencies on numerous issues. GIWS is housed in Environment and Climate Change Canada's (ECCC) National Hydrology Research Centre. GIWS and ECCC researchers have been collaborating for decades on improving the nation's water forecasting tools, water data collection and analysis, on understanding climate change impacts on Canadian water security. GIWS has also interacted on similar issues with Agriculture and Agri-Food Canada, the Canadian Space Agency, Employment and Social Development Canada, Global

Affairs Canada, Natural Resources Canada, Statistics Canada and Western Economic Diversification Canada (WD).

b) Do the specific freshwater issues targeted by your organization fit within the mandate of a given federal department and/or agency or do they relate to more than one department and/or agency? If more than one, have you been able to identify a lead department and/or agency with which to engage?

GIWS research topics span several agencies. As noted above, GIWS is co-located with ECCC's National Hydrology Research Centre so that interactions are straightforward. GIWS has had no difficulty connecting with the appropriate leads in the several other agencies listed above.

GIWS has been active in advocating for the development of the Canada Water Agency (CWA). The CWA falls under the mandate of the Ministry of Environment. GIWS has been asked, through its GWF program, to organize a series of public, virtual town hall information sessions about the proposed agency. Those events were held in 2020 and 2021 and are now complete.

c) Have you encountered notable successes in engaging with the federal government on freshwater issues? If so, please specify. If you have not had success in doing so, what in your opinion is the reason (e.g., no program available tailored to your needs, no identifiable service or unit within a department and/or agency with which to engage)?

In general, GIWS has had great success in engaging with the federal government. Our longstanding collaborations with ECCC are noted above. Our GWF program is an important success story, having had productive interactions with several of the agencies listed above since the program inception in 2016. GIWS has also had deep engagement with WD, including several funded facilities, and on a study of the proposed prairie irrigation expansion project in Saskatchewan. The support from the federal level also enabled GIWS to co-organize the first Water Day on the Hill event (with Canada's Chief Science Advisor Dr. Mona Nemer) in March 2020, where scientists from around Canada met with federal MPs, senators and officials to discuss water security research and related issues. More generally, we have found an openness of federal agencies to collaborate with USask and GIWS.

d) Do you foresee engaging with the new Canada Water Agency? If so, in what way? What are your organization's expectations with respect to the Agency?

GIWS expects to have deep engagement with the CWA. GIWS researchers have been actively involved in proposing its formation, and as mentioned above, our GWF program has played an important role in its development by organizing several virtual town hall information sessions over the past year. GIWS expects that, like many federal agencies in Canada, CWA will be seeking funded collaborations and partnerships with universities to augment its strengths. We expect that the CWA will play a coordinating role to ensure that Canada has state-of-the-art national-scale water forecasting, monitoring and management tools; that it will engage as required in inter-provincial (e.g. across large river basins) and international transboundary water management issues; and that it will take the lead in updating the Canada Water Act, while ensuring inclusive

representation of all stakeholders and peoples, in particular, of Indigenous and First Nations communities.

3. Federal water legislation, policies and regulations

a) Does your organization interact with federal departments and/or agencies on policies, legislation, regulations, or funding programs related to freshwater? If so, please specify.

GIWS interacts with federal departments and agencies on several of these topics. As mentioned above, the Ministry of Environment requested that we organize several virtual town hall information sessions on the CWA through our GWF program. We interact with several of the federal agencies on funding programs, notably, NSERC, SSHRC, CIHR, ECCC and WD. In particular, our GWF program is currently funded through a 7-year Canada First Research Excellence Fund grant (through NSERC, SSHRC, and CIHR).

b) Can you identify any current gaps in federal water legislation, policies, regulations, and/or initiatives, or in general across jurisdictions? If so, please specify.

Key areas for additional discussion could include First Nations water treatment plants, including routine maintenance and capacity building for sustainable operations; curtailing the widespread discharge of large volumes of raw sewage into Canada's rivers and coastal waters; in ensuring that the freshwater aspects of climate change are considered in planning across federal agencies; joint management of surface and groundwater resources; and river-basin and aquifer-scale approaches to policy and regulation.

c) Do you feel the federal government could play a more effective role in protecting watersheds in Canada? If so, which watersheds and how?

There is a need for federal involvement in watershed protection, in particular, in those river basins that cross provincial boundaries. Basin-scale water management is a preferred management framework around the world. The Saskatchewan River Basin is an example where the federal government could work with the provinces to ensure equitable and just protection and distribution of water resources across the entire length of the river and its tributaries.

d) Are there areas of freshwater policy, legislation and/or regulation where you feel the federal government should play a greater role?

See the response to question 3b.

e) Are there areas of freshwater policy, legislation and/or regulation that you feel the federal government should vacate and leave to another level of government or to the private sector?

No recommendation.

f) Are you aware of instances where federal freshwater policy, legislation, regulations, and/or initiatives have clearly benefitted from your organization's input?

GIWS researchers have strongly advocated for the formation of the Canada Water Agency. Hopefully if the agency is formed, it will benefit from that input.

4. Collection of information and data

a) Do you believe that there is sufficient data collected and made available publicly about freshwater in Canada?

Like many nations around the world, Canada can improve its collection and public access to water data. This is true for virtually all types of water data, from snowfall and rainfall, to streamflow, water quality and groundwater levels. Some key variables, for example the moisture content of soils, are not measured, but should be.

b) Do you believe there should be improvement in freshwater-related data-sharing?

Freshwater data should be openly shared, in an accessible format, around the world.

c) Is there any specific type of data or information you would like the federal government to provide to freshwater stakeholders?

In addition to the response to question 4b), freshwater data could be further processed to meet the needs of stakeholders, for example, to better estimate the likelihood of floods of a certain size.

d) Has your organization experienced challenges obtaining well-organized data from the federal government on issues relating to freshwater?

As a major research institution, we have not faced significant challenges fulfilling data needs.

e) Is the lack of standardized data or information across government jurisdictions a problem or challenge for your organization in accomplishing its objectives with respect to protecting and managing freshwater?

This is a major problem in Canada and around the world. There is a profound need for centralized data access and common data formatting.

5. International and business issues

a) Should Canada play a greater role internationally in helping find solutions, either through government and/or the private-sector involvement, to the challenge of global freshwater security?

Canada has a tremendous opportunity to lead and partner in developing solutions for global freshwater security. The federal government has made a substantial investment in water research in the nation's universities over the last decade. Many of the personnel that were hired over this time period have been working towards water security solutions. Canada is well-poised to now export this knowledge and to be viewed as a global leader in water security solutions.

b) Do you feel Canadian private-sector companies, including financial institutions, can and should play a role internationally?

The role of the private sector depends on the area under consideration. In the area of water security, one role that financial institutions can play is to use their investment potential as leverage to drive corporate water stewardship. Our conversations with our partners including Mercer, MNP, RBC Bank, and Ceres show an increasing awareness and eagerness towards sustainable engagement.

c) What role can the federal government play in better supporting freshwater-related academic research, R&D, businesses, products, and services?

As detailed in this briefing, the federal government is doing an excellent job in supporting freshwater-related academic research. This support has had a critical impact on improving the stature of Canadian water research programs, Canada's ability to attract top researchers to this country, and on preparing Canada for a water-secure future.