Supporting enabler organizations is a critical component to ensuring the continued growth of the water tech sector in Canada

Submission to the Parliamentary Subcommittee on Environment and Sustainability

Submitted by AquaAction

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June 2021

Executive Summary

Canada's water sector is undergoing rapid growth and development, with employment rates specifically related to water management growing at a rate of 13% over the next 4 years, compared to 5% in the total employment growth (Kevin Nilsen, CEO of ECO Canada, 2021).

Additionally, the Canadian water industry is currently benefitting from a spur in the development and application of innovative technological tools, applications, and approaches. This acceleration in development in the water technology (water tech) sector can be maximized with the appropriate systems in place. **Federal government investment in enabler organizations such as AquaAction that support the emergence, growth, and development of water tech enterprises is key for this nascent sector in Canada to thrive.**

Since 2015, through our flagship program the **AquaHacking Challenge**, bridges across sectors have been built and a next generation of Canadian innovators engaged to develop innovative tech solutions to pressing water issues across the country. The twenty-seven (27) emerging water tech companies that have been established are evidence of the program's impact.

These AquaHacking "Alumni" companies are providing their innovate water tech solutions to clients across Canada and internationally, in service to watershed outcomes (environmental) and community (public) health.

These young enterprises need more support. AquaAction is developing a new program to provide it: **Aqua Entrepreneur**. This program will facilitate operational testing opportunities within municipalities – often the end-users of water tech solutions.

We stand however at a crossroads. Despite commitments in the recent Federal budget, the structure of Federal funding programs leaves a gap into which programs such as our fall. **We find ourselves in between programs, where the mandate of one ministry ends and another has not yet started**.

We have been at the forefront of engaging young water tech entrepreneurs in Canada and establishing collaborative relationships between water NGOs and tech talent. We do not fit in a pre-existing box and our programs and their impact hang in the balance.

Without the support of enabler organizations such as AquaAction, the rate at which innovative water tech solutions can be developed, tested, and deployed is greatly reduced in Canada.

Our request to the Parliamentary sub-committee on Environment and Sustainability is to 'build bridge between mandates' with regards to water-tech and 'fill the program gaps' by:

1. Convening representatives from different ministries to come together and focus on water tech development & investment,
2. Supporting the establishment of a water-tech focused funding program that pools resources from different ministries.

Relevant Federal programs to consider include:

- Ministry of Economic Development's regional innovation funding
- Environment and Climate Change's watershed basin focused funding
- Ministry of Innovation, Science and Economic Development's innovation cluster funding
- Ministry of Infrastructure's Climate Innovation Program
- Global Affairs' CanExport SME program

These recommendations are based on:

- Observations from 6 years enabling emerging water tech enterprises across Canada (AquaHacking, 2021)
- Experience accompanying and witnessing the development and growth of twenty-seven (27) emerging Canadian water tech companies (AquaHacking Alumni, 2021)
- Consultation with municipal water department staff across the province of Quebec
- Interviews with municipal water tech innovation sector leaders across North America
- Our partner's 4 years of experience supporting the integration of sustainable transportation innovation in municipalities (IVÉO, 2021)
- Findings of the Canadian Core Cleantech Cluster (CORE Cleantech Cluster, 2020)
- Lessons learned from our participation in the Our Living Waters Network (Our Living Waters, 2021) and the WaterNEXT cluster (WaterNEXT, 2021)
- Our active participation in the public engagement process of the Canada Water Agency (CWA) and as signatory of the Five Foundational Pillars of the CWA (Five Foundational Pillars of the Canada Water Agency, 2021)

Further, we are motivated by the objectives laid out in the 2021 Federal budget "**to build a better, fairer, more prosperous, more innovative future. That means investing in Canada's green transition and the green (clean tech) and blue (water tech) jobs that go with it; in Canada's digital transformation and Canadian innovation; and in building infrastructure for a dynamic, growing country**" (Department of Finance Canada, 2021).

Background and Context

Since the onset of the global COVID-19 pandemic, 2020 and 2021 have been incredibly difficult years for all Canadians. As a result, the Federal government is in an unprecedented situation as it continues to work hard to ensure the health and safety of all Canadians as well as our country's economic security. Indeed, we recognize that the government is currently facing many pressing issues as it embarks on the implementation of a strong recovery plan that will not only carry us forward as an economy but that will also carry us forward as a nation.

The 2021 budget presented notable investments in clean technologies, innovation, climate resilience, entrepreneurship, digitization, infrastructure investment, and freshwater. The recommendations presented in this brief consider in detail the operational requirements necessary to deliver on these commitments.

From AquaAction's unique vantage point as a not-for-profit organization at the intersection of clean technology and sustainable freshwater management, we can say with absolute certainty that despite the best intentions and notable objectives in the 2021 Federal budget, an **important funding gap remains** when it comes to supporting the ecosystem that enables, leverages, and accelerates the development of innovative technologies that address Canada's most pressing freshwater issues.

Why Water and why innovative technologies?

Canada is a freshwater nation.

Canada holds 20% of the world's freshwater supply (The Conversation, 2021) and 45% of Canadians view fresh water as our nation's most important natural resource (RBC Canadian Water Attitudes Study, 2017). Yet a significant number of communities do not have reliable access to clean drinking water, many lakes and rivers are undergoing environmental deterioration, and climate change risks has the potential to significantly impact hydrological systems.

- In May 2021, 52 long term drinking advisories remain in effect in Indigenous communities in Canada (Indigenous Services Canada, 2021).
- In 2020, 100 of the 167 Canadian sub-watersheds were data-deficient and their overall health could not be measured. Of the remaining, 61% of them received poor or fair water quality scores and 53% had poor or fair for scores for hydrology (WWF-Canada, 2020).
- Canada is warming on average two times faster due to climate change and up to three times faster in the north (Environment and Climate Change Canada, 2015).
- Between 2000 and 2017, $28 billion has been spent responding to or repairing the impacts of climate-related water disasters in Canada (Canadian Water Security Initiative, 2019).
- In 2016, it was estimated that more than $60 billion would be needed to repair or replace aging drinking water infrastructure in Canada (Canadian Infrastructure Report Card, 2016).

Canada is an innovation powerhouse.

The clean tech sector is anticipated to grow to $2.5 trillion globally in 2022 (Smart Prosperity, 2018).

- The Canadian government continues to focus on its ability to be a leading clean tech economy as it aims to increase cleantech exports to $20 billion annually by 2025 (Canada's Economic Strategy Tables, 2018).
- Significant focus has been made by the Canadian government to support the clean tech sector nationally, successfully elevating Canada's position globally from 7th to 4th in the span of 3 years as a country from which cleantech companies are likely to emerge (Cleantech Insights, 2017).

Canadian tech innovation is poised to help address domestic and global freshwater issues. Canada can position itself as a leader in freshwater technology development on a national level. The time to do so has never been so timely nor so urgent. Access to clean freshwater is key to ensuring the health of Canadian citizens and communities. Sustainable water resource management is necessary to maintain resilient natural ecosystems and to support our water-dependent economy. It is through water that climate change impacts will be experienced by Canadians, with Canada warming twice as fast on average than the rest of the world (Global Water Futures address, CWA public engagement presentation). The development and implementation of innovative water tech solutions will be one way to mitigate these impacts.

Our Ask

When we launched our program in 2015, there was much reluctance among the eNGO sector of the benefits of a tech innovation challenge to address freshwater issues. That was 6 years ago. Today we many social and environmental initiatives embracing a 'challenge' format to engage the creativity and passion of young Canadians to act and bring their talent to the table.

As a charitable organization, we have been funded overwhelmingly by private and corporate foundations that have seen the potential of this new program model and have supported it.

Throughout our funding quests, we have stumbled up against the limitations of Federal programs time and time again.

Everyone loves the idea, but it is never quite within their mandate to support it. We understand the importance of clear mandates and program scopes. We also understand the need for innovative funding programs to spur change.

Therefore, we ask that the Parliamentary sub-committee on Environment and Sustainability consider playing a role in 'building bridges between Ministerial mandates' with regards to water-tech and filling the existing 'program gaps' by:

1. **Convening representatives from different ministries to come together and focus on water tech development & investment,**
2. **Supporting the establishment of a water-tech focused funding program that pools resources from different ministries.**

We welcome the opportunity to meet with you and discuss in detail.

About AquaAction: An Innovative and Unique Enabler Organization

AquaAction is registered Canadian charity and has been active since 2015. It was established by the De Gaspe Beaubien Family Foundation.

Vision - Mission

AquaAction envisions a future in which freshwater in North America is abundant, healthy, and managed sustainably.

AquaAction's purpose is to activate, support, and amplify young innovators as they develop real technologies and solutions to protect and sustain freshwater.

We believe

- **Change is necessary.** We must disrupt the status quo and think of new ways to approach freshwater challenges.
- **We need new ideas**. Young innovators have incredible potential to solve freshwater challenges.
- **Change takes time and ideas must be nurtured**. Young innovators need support throughout the innovation cycle, from testing ideas to piloting solutions to accelerating businesses.

We will deliver on our purpose in three ways:

- AquaHacking Challenge:
  A technology innovation challenge that engages post-secondary students to solve critical water issues
- AquaHacking Alumni:
  A network of young water technology innovators who are committed to changing the world
- AquaEntrepreneur:
  A water technology accelerator to propel innovative ideas and ready them for implementation through operational testing

Twenty-seven (27) youth-led water tech start-ups have been established through our flagship program, the **AquaHacking Challenge**.

Since the first edition of the program in 2015, the AquaHacking Challenge has taken place in **10 watersheds from coast to coast**. AquaAction has worked in partnership with leading water organizations across the country to leverage its programming to have positive impacts in terms of sustainable water management.

These include the:

- Okanagan Basin Water Board (OBWB)
- International Institute for Sustainable Development (IISD)
- Ottawa River Keeper (ORK)
- Centre d'interprétation de l'eau (C.I.EAU)
- Atlantic Water Network (AWN)

These organizations embraced the idea of leveraging the AquaHacking Challenge to engage with the business and technology sectors in their respective regions and expanded their network of partner for solutions to pressing water issues.

Through the AquaHacking Challenge, business mentors and coaches support teams through an 8-month program which integrates skills-development in entrepreneurship and leadership. Most program participants report that they would not have pursued a career in sustainable water management, entrepreneurship, or tech innovation had it not been for their experience in the AquaHacking Challenge.

Finalist teams benefit from admission to start-up incubation programs and seed funding invested once they complete the AquaHacking Challenge. They continue to receive business development support through the AquaHacking Alumni program. Their innovative ideas and water tech start-ups would never have seen the light of day had it not been for their experience in the AquaHacking Challenge.

Aqua Entrepreneur

The same focus on collaboration, mentoring and capacity-building have been applied to Aqua Entrepreneur, a new program that **secures operational testing opportunities for emerging water tech companies** – a key developmental stage which is lacking support in Canada in the water tech sector (CORE Cleantech Cluster, 2020).

Fulfilling this next phase in the water tech development continuum is critical to implementing and scaling innovative technologies, particularly in public markets such as municipalities and water utilities. From our experience through AquaAction, we see that those advocating for a solution to a water issue are often not the same stakeholders as those that have the capacity to fix the problem by implementing the solution. **There is a full cycle aspect to water innovation and solutions, that Aqua Entrepreneur will ensure.**

Technology testing and implementation require municipalities to play an active role along the technology readiness levels as defined by Innovation Canada (Innovation Canada, 2018). Adopting new technologies in municipal water departments can be challenging for many reasons:

- burdensome procurement processes prevent start-ups from responding to an RFP
- procedural barriers to adopting as-of-yet unproven technology
- lack of staff capacity to identify potential technology let alone oversee a test program
- inability to test unproven technologies without a framework of regulatory support,
- overcoming silos: water spans several different departments and difficult to balance conflicting objectives
- organizational cultural

In partnership with IVEO – a leading accelerator of testing and implementation of tech-based sustainable mobility solutions within the municipal market - Aqua Entrepreneur will address each of these and match public sector water needs with water tech solutions.

Bibliography

AquaHacking Alumni, 2021. https://aquahacking.com/en/alumni/

AquaHacking, 2021. https://aquahacking.com/en/

Canada's Economic Strategy Tables, 2018. *Clean Technology.* https://www.ic.gc.ca/eic/site/098.nsf/vwapj/ISEDC_CleanTechnologies.pdf/$file/ISEDC_CleanTechnologies.pdf

Canadian Infrastructure Report Card, 2016. Informing the Future: The Canadian Infrastructure Report Card. https://trenchlesstechnology.com/wp-content/uploads/2016/01/2016-Canadian-Infrastructure-Report-Card.pdf

Canadian Water Security Initiative, 2019. *Water Security for Canadians: Solutions for Canada's Emerging Water Crisis.* https://gwf.usask.ca/documents/meetings/water-security-for-canada/WaterSecurityForCanada_April-25-2019-2pg1.pdf

Cleantech Insights, 2017. *2017 Global Cleantech Innovation Index: A look at where entrepreneurial clean technology companies are most likely to emerge from over the next 10 years – and why.* https://www.cleantech.com/2017-global-cleantech-innovation-index-a-look-at-where-entrepreneurial-clean-technology-companies-are-most-likely-to-emerge-from-over-the-next-10-years-and-why/

CORE Cleantech Cluster, 2020. *The Road to 2050: Bridging the Gap Between Challenges & Solutions in the Water Sector.* https://foresightcac.com/wp-content/uploads/2021/04/CCC-Water_Final-09oct20-1.pdf

CORE Cleantech Cluster, 2021. https://corecleantech.com/

Department of Finance Canada, 2021. *Budget 2021: A Recovery Plan for Jobs, Growth, and Resilience.* https://www.budget.gc.ca/2021/home-accueil-en.html

Five Foundational Pillars of the Canada Water Network, 2021. https://b6c2cd30-2352-41b7-89aa-dd8402a61ecd.filesusr.com/ugd/c12153_8dce8d50fcd64eec88ace4ace634dd40.pdf

Indigenous Services Canada, 2021. *Ending long-term drinking water advisories.* https://www.sac-isc.gc.ca/eng/1506514143353/1533317130660

Innovation Canada, 2018. https://www.ic.gc.ca/eic/site/080.nsf/eng/00002.html

IVÉO, 2021. https://www.iveo.ca/

Our Living Waters, 2021. https://www.ourlivingwaters.ca/

RBC Canadian Water Attitudes Study, 2017. http://www.rbc.com/community-sustainability/_assets-custom/pdf/CWAS-2017-report.pdf

Smart Prosperity, 2018. *Smart Prosperity leaders call on government to help clean innovators get ideas to market, creating wealth and jobs*. https://www.smartprosperity.ca/content/308

The Conversation, 2021. Canada has 20 per cent of the world's freshwater reserves — this is how to protect it. https://theconversation.com/canada-has-20-per-cent-of-the-worlds-freshwater-reserves-this-is-how-to-protect-it-

159677#:~:text=As%20the%20global%20demand%20for,the%20world's%20renewable%20freshwater%20resources.

WaterNEXT, 2021. https://foresightcac.com/our-sectors/waternext/

WWF-Canada, 2020. *WWF-Canada's 2020 Watershed Reports: A National Reassessment of Canada's Freshwater.* https://wwf.ca/wp-content/uploads/2020/10/WWF-Watershed-Report-2020-FINAL-WEB.pdf