

WATER CANADA

INNOVATION 150

Canada's Water Brand
on the Global Stage

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Intelligence

Water Industry
Market Trends

Axworthy
on Canada's
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water's next
awards 2017
WINNERS!



Canadian Water 150

A vision for Canada as a leader on the global water stage.

BY R.W. SANDFORD

ON THIS MOST IMPORTANT anniversary for our country, we have opportunity to reflect upon the role water has played in shaping our identity. When people think of Canada, they think of water—in all its forms. Falling snow, dazzling ice, sparkling rivers, and more than two million lakes. Canada is the heaven to which the world's water gravitates when it needs to be reminded of its purpose and its power.

But over the last 150 years our world has changed. There are more of us, and our impact on the world is greater. We find that we need a new water ethic,

one that dispels the national myth of limitless abundance and connects us again with the sinuous, sensuous nature of our water courses. As part of that new ethic, we have to solve the problems that we have created with respect to the impact of our numbers and our needs on Canadian waters. In other words, we must get our water house in order for the next 150 years.

Francis Scarpallegia, the Member of Parliament for Lac-Saint-Louis in Montreal, has offered such a vision. Drawing on our existing strengths, Scarpallegia has proposed that Canada

distinguish itself on the world stage by offering foreign aid to support initiatives abroad related to the United Nations global sustainability goals related to water and peace. He also argued that we have the knowledge and experience to collaborate with other nations that wish to manage water in an integrated and sustainable way. By doing so, we can create a new water ethic in Canada—we only need to put all the pieces together.

Sustainable Development Goal policy support

The United Nations University Institute

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a policy support system to allow governments to measure and report on the progress of six policy critical sustainable development components. The aim is to enable governments to accelerate the sustainability process by supporting cross-sector, evidence-based policy and planning with respect to water-related SDGs. Such a framework would assist in making Scarpallegia's vision a reality.

This Policy Support System is export-ready. It is presently undergoing trials in five countries: Republic of Korea, Costa Rica, Tunisia, Pakistan, and Ghana. Canada must also consider using this process.

Citizen science and community-based monitoring

One of the best potential exports for improved integrated watershed management has been the movement toward citizen science and community-based monitoring. Climate change is rapidly imposing new paradigms for water management as the direct and indirect costs of managing extreme weather events continues to rise. These rising costs impact the economic and social stability of communities. Informed decisions regarding the allocation of water, water conservation, source water protection, and watershed ecosystem health need to be made based on sound scientific data. But, unfortunately, even in tandem, governments at all levels do not have the resources to address all water data deficiencies.

If done correctly and based on recognized standard protocols, citizen science and community-based water monitoring have been proven to provide cost effective, accurate scientific data to decision-makers. These approaches have the added benefit of increasing water literacy and empowering citizen engagement to help steward local watersheds. The pioneering work of Living Lakes Canada, Living Lakes International, and the Global Nature Fund, and pilot projects in the Northwest Territories have demonstrated the potential to inform decisions at multiple scales while building the country's water stewardship culture.

Restoration hydrology

The UN's 2030 *Transforming Our World Agenda* makes it very clear that sustainable development can no longer simply aim for environmentally neutral solutions. If we are to achieve any meaningful level of sustainability, all development must also be restorative.

Canadians are at the leading edge of the entirely new field of restoration hydrology or what is also known as applied regenerative hydrology. We are increasing our understanding of landforms and how they are influenced by precipitation, increasing soil moisture and health while at the same time providing free water storage. Through productive ecological succession, we unlock ecosystems as disaster risk reduction tools and bolster their role in carbon sequestration, and while creating healthier, safer, and more pleasant and productive places to live.

As a result, we are shifting investment in Canada toward restoration of upland watersheds with the goal of viewing water infrastructure not just in terms of hard engineering but as a combination of both natural and engineering elements. Canadian expertise in mine water reclamation, as exhibited at an INCO site in Sudbury, Ont., and the Britannia mine site in British Columbia are examples of this.

Urban water infrastructure and asset management

In the face of more extreme weather events in the future, we need rain gardens, green roofs, stormwater parks, cisterns, and solutions that in addition to their ecological role can function as public art; this is already done in some cities. We are getting better and better at utilizing restoration hydrology as a critical element of urban adaptation to climate disruption; we have much to export to low income countries/the world majority who want to leapfrog outdated approaches and adopt new and more sustainable technologies and practices.

Water governance

Approximately half of the some-250 transboundary basins around the world lack multi-lateral agreements for managing shared water resources.

for Water, Environment and Health (UNU IWEH) has created a framework for meeting the targets of sustainable development goals on water and water-related goals in the UN's *Transforming Our World Agenda*.

National policy makers responsible for water from environmental and socio-economic perspectives face the challenge of putting the UN's Sustainable Development Goal (SDG) 6 into action and of measuring and reporting on their policy and implementation progress. The UNU IWEH, located in Hamilton, Ontario, and its partners have developed

Canada's Forum for Leadership on Water (FLOW) is comprised of some of the world's leading experts on water policy. With a century of experience with the International Joint Commission and the Boundary Waters Treaty to the Columbia River Treaty and institutions developed to manage waters that cross provincial and territorial borders, Canada has substantial, exportable experience developing and sustaining robust mechanisms for governing shared waters. Canada can also build upon breakthroughs that have been made here in crafting ground-breaking transboundary water agreements and treaties, such as the 2015 transboundary water agreements between Northwest Territories and the governments of Alberta and B.C..

Canadian freshwater science

The Canada First Research Excellent Fund has invested heavily in initiatives like the Global Water Futures Research Program.

Presently, this program is the largest university-based water research program in the world. The partnership-based, seven-year science initiative aims to transform the way communities, governments, and industries in Canada and other cold regions of the world prepare for and manage an increasing number of water-related threats. An integrated flood and drought prediction system, which the network has promised to deliver, would be a highly-prized export product.

Canada 150 vision

On December 21, 2016, the UN General Assembly unanimously adopted a resolution entitled International Decade for Action Water for Sustainable Development, 2018-2028. Sponsored by 177 member states, the Decade aims to promote sustainable development and integrated water resources management, as well as increased cooperation and partnerships to support the implementation of the UN's 2030

Sustainable Development Goals with respect to water.

The declaration of the United Nations on the global water crisis presents Canada a nested win-win-win opportunity. By actively participating in this Decade of Action, Canada can improve its own water management, while simultaneously helping others abroad do the same.

Canada provides its best policies, practices, and technologies to others. Through this, we advance the water sector and our country in the direction of a new national water ethic. And as we do so, we not only get our own house in order, we help create a better, more just, equitable, and sustainable world for others. On the country's 150th birthday, this would be a fitting gift. *wc*

R.W. Sandford is the EPCOR Chair of Water & Climate Security with the United Nations University Institute for Water, Environment and Health.



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Prime Minister Justin Trudeau and WWF-C president David Miller.



David Miller, Elizabeth Hendriks, the Prime Minister, Meg Beckel.



Photo: WWF-Canada



Health Check

Years of research by WWF-Canada lay bare the need for a national freshwater monitoring system. BY ELIZABETH HENDRIKS

EVERY SUMMER, as we head out in canoes, jig fishing lines, and dive off rocky outposts, we think of Canada as a nation brimming with rivers and lakes of cool, clean water. But findings from four years of twin health and threat assessments by WWF-Canada paint a vastly different picture of our most valuable resource: Canada’s freshwater ecosystems are at risk.

Watershed Reports found significant disturbances to Canada’s 25 watersheds (made up of 167 sub-watersheds) from municipal and industrial pollution, urbanization, agricultural runoff, loss of forest, climate change, hydropower dams, pipeline and transportation incidents, and other human activities.

Consider this:

- Pollution is a serious concern in 60 of 167 sub-watersheds.
- Climate change is already affecting every sub-watershed in Canada, with 21 experiencing a high level of impact.
- Habitat loss from agriculture, urbanization, and forest loss is significant in 93 sub-watersheds.

These are staggering results. Perhaps even more alarming however, is the dearth of data about watershed health.

- Though robust data for stressors is available, sufficient data for all the key indicators used to measure stress and the resulting health impacts are available in

only 14 of 167 sub-watersheds.

- Of the 167 sub-watersheds, 110 are lacking the data necessary to paint a baseline picture of watershed health.

And when we do have health data—on water quality, flow, fish populations, and the presence of flies, beetles, worms, snails, and leeches (benthic invertebrates) that make an aquatic system healthy—there is even more cause for concern.

- Water quality is poor or merely fair in 42 of 67 sub-watersheds with data.
- Flow is sub-standard in 37 of the 129 sub-watersheds with data.
- Benthic health fails to reach a good threshold in 20 of 55 sub-watersheds with data.

Human activity is putting unprecedented strain on ecosystems. Yet as a nation we are failing to collect the information necessary to understand to what extent these stressors are harming freshwater across the country. As a consequence, Canada is unable to make evidence-based decisions about our most valuable resource. Canada urgently needs to invest in a national, standardized freshwater monitoring system that tracks the state of our water now and in years to come as climate change and increased population put more and new pressures on this resource.

Indeed, it's shocking to most Canadians to learn that Canada doesn't already track freshwater health on a national scale. Even Prime Minister Justin Trudeau, a self-described map and data geek, expressed concern at the struggle to collect information about Canada's freshwater.

"Hearing about what WWF-Canada had to go through over the past four

years—collect and collate data from so many different sources to try and get a picture of something that, quite frankly, Canadians take for granted and we should know much more about—is a real challenge," Trudeau said at WWF-Canada's Healthy Waters Summit in Ottawa in June. He noted that the public sector, different levels of government, and private partners must step up to ensure data is aligned, collated, and shared.

"We need to know the extraordinary resources we have—not just surface water, but aquifers, as well. We need to understand what's happening to it over time. We need to understand the impacts of climate change, extreme weather events, deforestation, shifts in population patterns, challenges of eutrophication, issues around concentration of waste through cities—there's so much we need to know and so little time in which to gather it, to understand it, and to act to protect what we have for future generations," Trudeau said.

A national, standardized freshwater monitoring system is an essential first step. Another is national recognition that as a public resource, freshwater data should be open, publicly available, and accessible, regardless of whether its collected by government, academia, or industry. Canada now has a baseline assessment of disturbances to freshwater and new awareness of just how little is known about watershed health. The Watershed Reports serve as a wakeup call. It's time for action on a national scale to improve freshwater ecosystems for communities and wildlife, now. **wc**



Elizabeth Hendriks is WWF-Canada's vice-president of freshwater conservation.



The latest WWF-C Watersheds Report is online at wwf.ca



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water's next awards 2017

Celebrating Canadian water leaders and champions



Water's Next winners received a plaque and an individually hand crafted glass pin by artisan glassblower Aaron Calenda of Guelph, Ont.



Welcome to Water's Next 2017.

WATER CANADA magazine's Water's Next Award program is the only national awards program to honour leadership across the entire water sector—including public servants, non-governmental groups, researchers, municipalities, and technology providers. Since 2010, Water Canada has hosted the awards to help strengthen and celebrate this national community of water leaders, champions, and innovators.

We believe that it is important to showcase these accomplishments, because so many of the accomplishment

that our finalists and winners have achieved go unrecognized by the broader public. And yet, our community knows that clean drinking water, healthy rivers, safe wastewater discharge, and tools to help communities understand water are precious gifts to society. Our hope is that their stories will inspire the next generation of water leaders and innovators.

This year, we owe the success of the program to the 14 outstanding and respected water leaders who participated on our selection committee.

Their guidance in the selection of our 40 finalists and 14 winners demonstrates some great breadth of knowledge and experience.

We were pleased to celebrate their success during our 2017 Water's Next Gala on June 22 at the Sheraton Hotel in Toronto, held in conjunction with the 8th annual Canadian Water Summit.

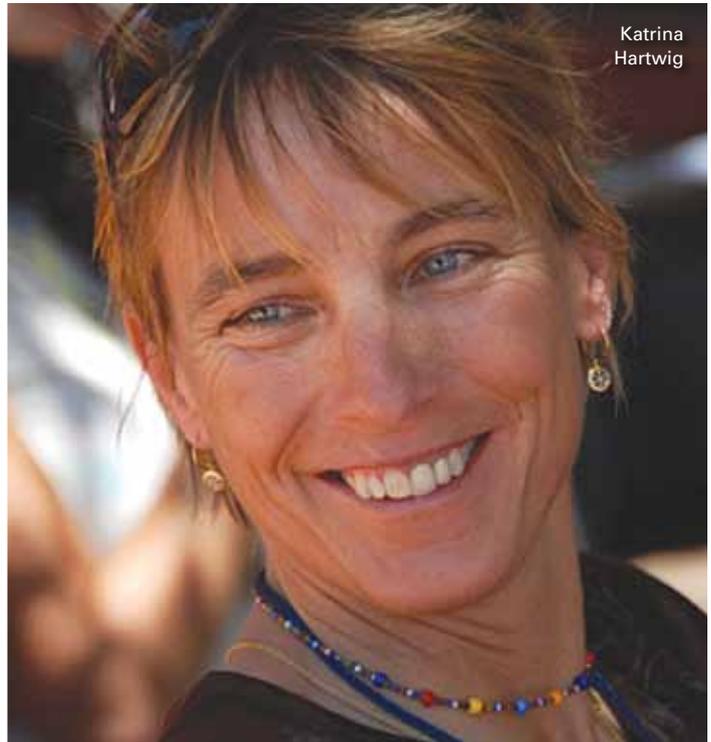
Thank you to the nominees, winners, and finalists for what you bring to the sector, for your vision, and persistence to protect our most precious resource. We proudly celebrate you in these pages.



watersnext.ca



Katrina Hartwig and Prime Minister Justin Trudeau at the WWF-Canada Healthy Waters Summit.



Katrina Hartwig

Non-Government Organization: Katrina Hartwig, Living Lakes Canada

GROWING UP on her family's cattle ranch in the Southern Rockies of B.C., Kat Hartwig developed a strong sense of belonging to and responsibility for the land, which has driven her environmental advocacy efforts for over thirty years. But about twenty years ago, she shifted her focus to water.

"I felt that water was a tangible way for people to understand the impacts of climate change," she explained.

As executive director of Living Lakes Canada, Hartwig works at empowering communities to look after their source water and build resilience. "We're trying to normalize water stewardship," she said.

One way is through community-based monitoring (CBM) of freshwater resources. In collaboration with researchers from Simon Fraser and Acadia universities, Hartwig recently led a nation-wide survey of CBM organizations in Canada. The study found that CBM programs are filling information gaps on watershed health, informing decision-making at various levels of government, and fostering environmental stewardship in communities across the country. The researchers also found that most CBM programs are following scientifically rigorous protocols and having their data analyzed by professionals.

Under Hartwig's leadership, Living Lakes Canada hosted the first-ever national dialogue on community-based monitoring at the North American Lake Management Society Symposium in Banff in 2016. The event connected indigenous and non-indigenous citizen scientists with some of the world's leading water scientists.

"It's about getting boots on the ground," said Hartwig. Given the dearth of data for many of Canada's watersheds and the challenges that climate change will pose for water management, these types of collaborative models are becoming essential to gather information and provide support "in order to make really important decisions around water allocation for both human communities and healthy ecosystems."

Heather Leschied, program director for Living Lakes Canada, was just out of university when she started working with Hartwig in 2005. "She's an incredible leader and mentor who genuinely cares about the people she works with and who cares deeply about the health of the environment," she said.

And she's not afraid of tackling big issues. Leschied noted that Hartwig has played an instrumental role in many large-scale, long-term environmental conservation initiatives in the Columbia Basin and beyond—from starting the first recycling depot in the valley thirty years ago, to helping the Columbia Wetlands obtain its designation as a Ramsar Site (a wetland of international importance under UNESCO's Ramsar Convention), to rallying shareholders to convince a major oil and gas company to pull out of a mining project that would have affected grizzly bear habitat.

"She takes on these programs with grace, commitment and leadership," said Leschied. "She's the catalyst. She understands who should be involved and is highly collaborative, working with government, industry, community groups, academic institutions [...] empowering all those people to work collectively to move the vision forward." — Eve Krakow

water's next awards



Water Steward of the Year

**Katrina Hartwig,
Living Lakes Canada**

(L-R) Nelson Switzer, Nestlé Water North America (presenter); Caroline Dubois, The Gordon Foundation (accepting on Katrina's behalf); Katherine Balpataky, Water Canada.



(L-R) Kurt Meyer, Jacqueline Ho, Kevin Litwiller, Jim Belcastro, Rick Mosher, Ward Janssens, Katherine Balpataky (host), Irene Hassas (presenter)



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Axworthy is pictured here with his grandchildren at Victoria Beach, Lake Winnipeg.



Thomas Axworthy gives a lecture at Zhejiang University in the city of Hangzhou.

Water, Peace, Security

Celebrate 150 by working on water. BY THOMAS S. AXWORTHY

CANADIANS VALUE WATER more than any other of our natural resources, including oil and gas. A January 2017 survey on attitudes about water by the Royal Bank, for example, found 45 per cent viewed freshwater as Canada's most important resource compared to 25 per cent who chose petroleum. But you would never know this by our public policy priorities.

While Canadians are consumed by debates about pipelines, Lake Winnipeg is dying, boil water advisories continue to plague remote communities, and we have not even mapped our groundwater aquifers, yet we allow companies to withdraw vast amounts of freshwater for a pittance. On sensible water policies and priorities, Canadians are sleepwalking into the 21st century.

We are not alone in ignoring the centrality of water. Four billion people or 66 per cent of the world's population lives without sufficient access to freshwater for at least one month a year, according to the journal *Science Advances*. This is because both India and China are suffering severe shortages. For that reason, the World Economic Forum places water risk in

the top three global problems along with climate change and terrorism. But water rarely makes it onto the agenda of the G20, and leaders like Donald Trump are making their own water problems worse rather than helping the world cope with the growing crises.

This is a global leadership vacuum that Canada could and should fill. Domestically, a Minister for Water should be appointed to Cabinet to galvanize action as Catherine McKenna has done on climate change. In international development policy, Canada should make water risk the central organizational focus, because water is critical to the United Nations Sustainable Development Goals, as it is a connector between health, food, and the environment.

There is another international dimension to water that the world is starting to realize: In 2012, the InterAction Council of former world leaders led by Jean Chretien declared that water scarcity was a threat to peace and recommended that the UN Security Council take up the issue. In November 2016, for the first time, the Security

Council did indeed debate the topic of water, peace, and security. If Canada hopes to win election to the Security Council, what better platform than leading the world to realize that water is connected to peace?

Canada's 150th anniversary is a time to celebrate the past but more importantly a time to look forward to new goals and priorities. Jahmai Moskotaywenene, an elementary student at St. Pius X in Thunder Bay, did this recently in writing the prime minister. He wrote, "Dear Mr. Trudeau, my class and I want to make Canada's people equal. We also want to make everybody's amount of water equal. Everybody should have the same amount of water to drink, bath, and wash their hands without getting rashes". Amen to that for Canada and the world! wc



Thomas S. Axworthy is public policy chair at Massey College, University of Toronto and secretary-general of the InterAction Council.