

PARTNERS FOR ACTION

# P4A

ANNUAL

REPORT 2019



**PARTNERS FOR ACTION**



UNIVERSITY OF  
**WATERLOO**

FACULTY OF  
ENVIRONMENT



# About us

## PARTNERS FOR ACTION (P4A)

P4A is an applied research network advancing flood resiliency in Canada in the face of climate change and extreme weather. P4A's collaborative approach brings together diverse stakeholders to create and share knowledge, address information needs and drive action. P4A is based in the Faculty of Environment at the University of Waterloo, with founding support provided by The Co-operators Group Ltd. and Farm Mutual Re.

P4A's mandate is to facilitate increased risk awareness and improved decision making to help Canadian communities become more resilient to flooding. We work towards this mandate through:



**Conducting innovative, practical research** and fostering relationships to support such research;



**Sharing results and best practices** including measurable activities to reduce risk of flooding;



**Facilitating collaboration** between researchers, governments, businesses and non-governmental organizations; and



**Informing Canadians** about their flood risk, actions they can take to reduce their risk, and opportunities for risk transfer, such as insurance.







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**PARTNERS FOR ACTION (P4A)**



## DIRECTOR'S MESSAGE

### P4A Is Raising Awareness to Increase Flood Resilience

Canadians in both urban and rural communities across the country faced serious flooding in 2019 and many are still recovering from its devastating impacts.

These events highlight the collaborative effort that is needed to increase flood resilience. Homeowners must play an important role in protecting themselves and their property from flood risks, but they need information and resources about how to achieve this goal. Governments have authority and resources, but they need tools to engage the public to encourage household preparedness. Partners for Action is leading the way in advancing flood risk awareness and equipping decision-makers with evidence-based knowledge to address the challenges of flooding in a changing climate.

This year, P4A projects generated new knowledge about flood risk communication, including awareness-to-action messaging, which has informed the work of public officials who engage Canadians. P4A's work has also provided Canadians with practical, understandable advice about actions to protect their homes from costly and disruptive flood impacts. We have planted the seeds of new and exciting branches of inquiry that will inform community flood resiliency strategies and support urban and rural communities in adapting to climate change.

P4A is dedicated to addressing relevant questions and sharing knowledge through our partnerships across Canada. In this report, we outline our work from the past year and highlight some of the important new initiatives and projects we are planning to advance flood resiliency in Canada. In the coming year, P4A will engage our national stakeholders' network of dedicated practitioners, representing all levels of government, industry, conservation authorities, non-government organizations and professional associations from coast to coast, in order to effectively mobilize knowledge into action. We are proud of our accomplishments and excited about our new plans for generating evidence-based knowledge from practical research, engaging our valued stakeholders and empowering Canadians to take action on flooding in a changing climate.

**ANNA ZIOLECKI**

DIRECTOR, PARTNERS FOR ACTION  
UNIVERSITY OF WATERLOO



## CHAIR'S MESSAGE

### **P4A Advances Flood Resiliency through Collaboration**

Making Canadian communities more resilient to the impacts of climate change and extreme weather requires a partnership of governments, the business community, non-government organizations and citizens.

This means addressing tough questions in a collaborative way, participating in meaningful cross-sector dialogue and committing to doing things differently, including how we tackle the challenges of flooding in Canada.

Partners for Action is a leader in practical, applied research on flood resiliency. With its extensive network of partners across the country, P4A is uniquely positioned to bring together diverse knowledge to inform climate change adaptation strategies targeting flood risk. P4A is leading the charge on the translation of flood risk awareness to action by developing evidence-based communication and education resources that encourage Canadians to protect themselves and their homes. Its expertise in flood resiliency has made P4A a trusted source of information, and its dedication to practical, applied research has attracted attention from both governments and private sector organizations seeking strategies to protect Canada's urban and rural communities from flood risk.

The University of Waterloo's nation-leading strengths in climate change adaptation, proven record of high-quality research and culture of innovation and entrepreneurship have resulted in an environment of expertise, which P4A leverages to enhance its impact.

We are grateful for the continued support of our partners. I'm excited about P4A's future and its goals of advancing flood resiliency in Canada. The Faculty of Environment is committed to continuing our journey in the coming year in contributing to a climate-resilient Canada.

**JEAN ANDREY**

DEAN, FACULTY OF ENVIRONMENT  
CHAIR, PARTNERS FOR ACTION  
ADVISORY COMMITTEE







# Advisory committee members

## PARTNERS FOR ACTION (P4A)

### JEAN ANDREY

CHAIR / WATERLOO / ON

Dean, Faculty of Environment,  
University of Waterloo

### BARBARA TURLEY-MCINTYRE

GUELPH / ON

Vice-President, Sustainability  
and Citizenship, The  
Co-operators Group Ltd.

### JEAN-PIERRE GAGNON

CAMBRIDGE / ON

President and CEO, Farm Mutual Re  
(Steve Smith, until August 2019)

### BETH CROSBIE

ST. JOHN'S / NL

Past President and current  
Atlantic Regional Director,  
Canadian Real Estate Association  
  
International Director,  
Board of the U.S. National  
Association of REALTORS

### DAVE MURRAY

VICTORIA / BC

Past President, Canadian  
Water Resources Association

### DAVID DIABO

OTTAWA / ON

Senior Special Advisor,  
Emergency Management,  
Assembly of First Nations

### JÉRÉMY LEFEBVRE

OTTAWA / ON

Manager, Policy Development,  
Public Safety Canada

(Matthew Godsoe, Director  
Emergency Management  
Strategy Office, Public Safety  
Canada, until June, 2019)

### TREVOR SMITH DIGGINS

GUELPH / ON

Communication Strategist

### ANDREW WILSON

EDMONTON / AB

Director, Resilience Strategy,  
Alberta Environment and Parks

### CINDY TOTH

OAKVILLE / ON

Past Director of Environmental  
Policy, Town of Oakville

### WOLF KELLER

CALGARY / AB

Chair, Expert Panel on  
River Flood Mitigation

Former Director of Water  
Resources, City of Calgary

### ANNA ZIOLECKI

WATERLOO / ON

Director, Partners for Action,  
University of Waterloo

### JASON THISTLETHWAITE

WATERLOO / ON

Assistant Professor  
Faculty of Environment

Associate Director,  
Partners for Action,  
University of Waterloo

# 2019 highlights

# P4A

PARTNERS FOR ACTION (P4A)

rete  
Flood Ins  
Policy

## RAISING AWARENESS

### DEVELOPED EMERGENCY PREPAREDNESS AND INSURANCE

infographic, in partnership with City of Mississauga



Reached

>600K

READERS WITH  
P4A FLOOD  
PREPAREDNESS TIPS

via a national media campaign

### DEVELOPED FLOOD PREPAREDNESS

infographic for Canadian youth



50K



### ONLINE VIEWS

of FloodSmart Canada and  
Partners for Action websites



### CREATED FLOODSMART NEWS

a national newsletter reaching

1,200+

practitioners across Canada



790

TWITTER

followers

featured in

100+

MEDIA  
STORIES

across Canada



550 INDIVIDUAL  
MEMBERS

REPRESENTING 175 ORGANIZATIONS  
10 PROVINCES AND 3 TERRITORIES

in P4A's Stakeholder Group





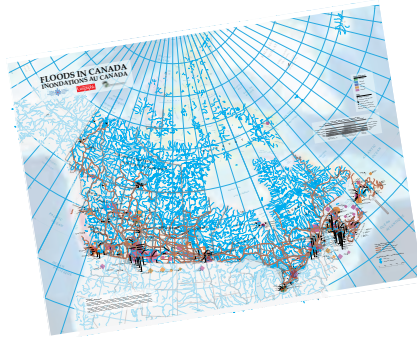
## MOBILIZING KNOWLEDGE

Developed bilingual educational resources on flooding, available to more than **20,000** educators, in partnership with Canadian Geographic and the Royal Canadian Geographic Society



**1** How to Be Flood Smart – Infographic

**2** Floods in Canada – Tiled Map



**3** How to Be Flood Smart – a series of lesson packages geared towards students in grades 5–12

### Lesson Package 1

Sharing information through public service announcements

### Lesson Package 2

Communicating creatively with infographics

### Lesson Package 3

Identifying and interpreting flood occurrences

### Lesson Package 4

Causes, effects and regional patterns

[floodsmartcanada.ca/educational-resources-on-flooding-in-canada](https://floodsmartcanada.ca/educational-resources-on-flooding-in-canada)

**Hosted a national workshop** on flood risk communication for representatives from government, emergency management, non-government organizations, business and the research community

**Released P4A's 11th report**, Effectively Communicating Flood Risk to Canadians: Understanding the Challenges and Developing Best Practices

**Hosted a community engagement event** – RAIN Smart Framework for Municipalities – in partnership with Reep Green Solutions

**Interviewed experts in flood and risk communication**

**Developed awareness-to-action flood risk communications materials**, including messaging informed by community-based social marketing

## WORKING WITH CANADIANS

### **P4A served as expert advisor for the following initiatives:**

- › Advisory Council on Flooding (Public Safety Canada)
- › Federal Public-Private Working Group on the Financial Risk of Flood (Public Safety Canada)
- › Federal Expanded Flood Mapping Committee (Public Safety Canada)
- › Community Risk Champions Advisory Group (Canadian Red Cross)
- › CatIQ Connect – Canada’s Catastrophe Conference (2020), Steering Committee (CatIQ)
- › RAIN Smart Neighbourhoods (Reep Green Solutions)

### **P4A was an invited speaker and participant at workshops, conferences and events:**

- › Upper Thames River Conservation Authority meeting (invited speaker)
- › Manitoba First Nations Flood Preparedness Forum: Assembly of Manitoba Chiefs (invited speaker)
- › Natural Catastrophes and Consumer Awareness Working Group: Canadian Council of Insurance Regulators (invited speaker)
- › CatIQ Connect – Canada’s Catastrophe Conference (2019) (fireside chat moderator)
- › Casualty Actuarial Society Spring Meeting (invited speaker and panel member)
- › Infrastructure Canada Delegation to University of Waterloo, led by Deputy Minister (invited speaker)
- › Communities Addressing Climate Change Adaptation and Disaster Risk Reduction Together: Western University and Institute for Catastrophic Loss Reduction (invited participant)
- › Farm Mutual Re. Board of Directors meeting (invited speaker)
- › Doors Open Waterloo (invited participant)

# Beyond Sandbagging:

P4A

RETHINKING CANADA'S APPROACH TO FLOODS

In spring 2019, flooding wreaked havoc in many Canadian communities, closing highways, forcing evacuations and triggering states of emergency.

It's an increasingly common story. And the scope of the problem keeps growing, driven by climate change, development in flood-prone areas and loss of greenspace that soaks up rainfall. The worse it gets, the bigger the bills.

Federal disaster assistance payments for flooding now total more than \$600 million a year – double the average from 40 years ago. Meanwhile, annual insurance payouts for overland flooding have hit the \$1 billion mark. “We are at a tipping point,” says P4A's director, Anna Ziolecki. “What we're doing is not working, and we need to take some drastic steps.”

## **Flood mapping**

The first priority is identifying where the risks are. However, Canada's Flood Damage Reduction Program, which funded flood-risk mapping in urban areas, was axed in 1996. As a result, most of the maps available today are badly out of date, and Canada has no website where residents can discover whether their property is at risk. In a 2016 P4A survey of 2,300 Canadians who live in designated flood-

risk areas, only six per cent of respondents were aware of that danger.


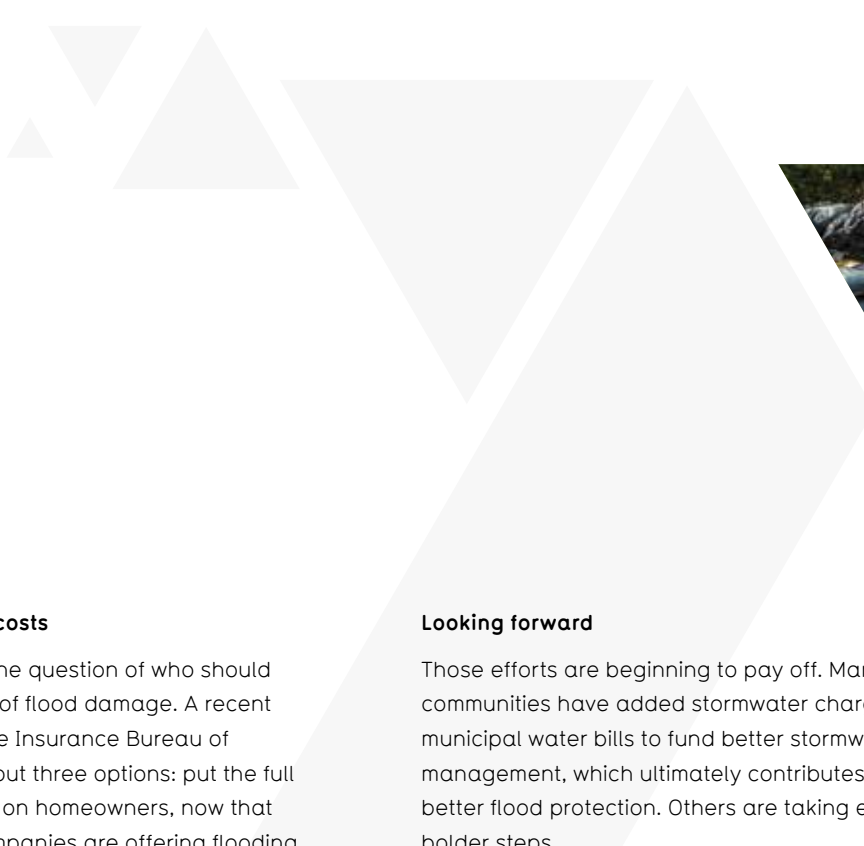
“As a first step, we need to create a national repository for existing flood maps,” says Jason Thistlethwaite, P4A's associate director. “Ultimately, though, what we need to do is map the entire country and make the results publicly available.”

## **Buyouts and better development practices**

Another key is smarter development. More paved surfaces in Canada's growing cities are creating more runoff, overwhelming aging sewers built to handle much smaller volumes. Encouraging green roofs, permeable pavement and stormwater ponds would help temper that flow.

Meanwhile, development in high-risk areas continues. As the same susceptible homes get hit year after year, Thistlethwaite believes that governments should consider buying out the highest-risk residents. “Taxpayers are questioning why we continue to bail out homeowners who live in the path of floodwaters,” he says.





### Covering the costs

Then there's the question of who should bear the cost of flood damage. A recent report from the Insurance Bureau of Canada lays out three options: put the full burden of risk on homeowners, now that insurance companies are offering flooding insurance; have government cover the highest-risk properties, while the private sector covers the rest; or create a pool of funds from insurers, government contributions and property tax levies to cover the highest-risk properties.

In any scenario, the authors of the report emphasize the need for greater consumer awareness and for government investments in flood mitigation measures to lower homeowners' risks to an affordable level.

#### **P4A: empowering and informing Canadians**

P4A has been taking action. As well as engaging in federal policy discussions, we're engaging with communications experts, government, non-government organizations and industry to develop best practices and resources for flood risk communication. We've also created educational materials to teach schoolchildren about flooding and how to prepare.

### Looking forward

Those efforts are beginning to pay off. Many communities have added stormwater charges to municipal water bills to fund better stormwater management, which ultimately contributes to better flood protection. Others are taking even bolder steps.

In May 2018, the federal government launched a \$2 billion Disaster Mitigation and Adaptation Fund to finance infrastructure projects that reduce the risk of flooding, droughts and forest fires. That's a positive step, says Thistlethwaite, but many municipalities can't afford the 50 per cent buy-in required to access federal funds.

That's especially true in rural areas, where the tax base is small and geography is big. "Government needs to invest in those communities so that they can increase their resilience," he says.

Ultimately, Ziolecki believes that everyone has a role to play in managing floods. Government needs to invest in resilient infrastructure and create effective policy at all levels. Homeowners must take steps to manage their risk and water on their property. Meanwhile, the insurance sector plays an important role when disaster strikes, through products like residential overland flood insurance.

"Flooding is such a complicated issue," Ziolecki says. "However, we're optimistic that the momentum from the focus on these issues this past spring will continue and lead to action."



## JASON THISTLETHWAITE

ASSOCIATE DIRECTOR, PARTNERS FOR ACTION

ASSOCIATE PROFESSOR IN THE SCHOOL OF  
ENVIRONMENT, ENTERPRISE AND DEVELOPMENT (SEED)

UNIVERSITY OF WATERLOO

### BUILDING RESILIENCE THROUGH RISK SHARING

P4A's research program is motivated by a growing demand for collaboration and coordination in the support of new and innovative risk-sharing public policy.

This demand is driven by governments seeking an alternative to investing in costly structural defenses – such as dams, dykes or reservoirs – to protect our communities and economy from the physical risks of climate change and flooding.

Historically, governments invested in these physical barriers to protect people and important infrastructure from the hazard of flood water. In the event that flood water overwhelmed these defenses, governments would support recovery by funding disaster assistance. Today, climate change and the increasing costs of flooding have raised questions about this approach and made a shift to risk-sharing an attractive option.

Risk-sharing spreads the burden of protection among a range of different strategies and stakeholders. For example, flood insurance shifts responsibility for flood recovery from government to a private risk transfer market,

where premiums are used as price signals to support risk mitigation and collected to fund recovery. The adoption of risk-sharing has become particularly pronounced worldwide as climate change is leading to floods that surpass historical design standards of infrastructure.

The adoption of risk-sharing, however, requires significant coordination between a range of stakeholders, including multiple levels of government, developers, insurers and property owners. In addition, knowledge of risk and where it is most acute is also critical to efficiently direct resources towards risk reduction. P4A is supporting these efforts in several ways through our research.

First, we are initiating a research project on managed retreat, where governments offer to purchase properties in high-risk areas to encourage relocation to safer areas. Managed retreat is widely considered the most efficient means of reducing risk since it directly reduces the exposure of property and other assets from



flood waters. But, implementation often faces significant opposition from property owners who justifiably do not wish to move from locations often inhabited for generations. P4A is addressing this challenge by evaluating several existing managed retreat programs to identify strategies for ensuring they are politically viable, socially acceptable and economically efficient.

Second, P4A is exploring how research on socio-economic vulnerability can be used to prioritize investment in flood risk reduction. Existing research in Canada has relied on historical measures of flood inundation and extent, in addition to some analysis on the exposure of property and people. Socio-economic vulnerability, however, often represents a more significant predictor of resilience in a given community. If those affected by flooding have resources and social networks in place, they are much more

likely to recover quickly. Without these resources, many people are forced to take prolonged breaks from their jobs and face significant financial pressure, often leading to long-term mental health issues. P4A is participating in the development of a socio-economic assessment capable of identifying areas of Canada where a lack of resources and capacity justifies more policy attention from governments.

Lastly, P4A is supporting research on the exposure of Canada's Indigenous communities to flood risk. Many of these communities are located along waterways and coastlines prone to flooding, but little is known about their actual exposure to risk. By identifying the proportion of these communities exposed to extreme flood scenarios, governments and other risk managers can prioritize resources to support those most in need.



# Programs and Research

P4A

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### **Communicating Flood Risk to Canadians: Understanding the Challenges and Developing Best Practices**

Encouraging Canadians to take action on flooding is essential to improving resiliency in homes and communities. Reducing flood risk requires a coordinated effort and shared responsibility between governments, non-governmental organizations, industry and other stakeholders who have resources that can contribute to these efforts. Individual Canadians also have a role to play in managing flood risk, by preparing for flood emergencies and adopting property-level protection measures.

However, Canadians lack awareness of their flood risk and are therefore unlikely to adopt protective behaviours, such as preparing for emergencies or buying insurance. Identifying ways to encourage flood preparedness is a challenge for many communities and organizations. The approach to communicating information on flooding can either inspire individuals to take important steps to reduce personal-level and property-level risks or it can leave people feeling discouraged, to the point that they ignore important advice from experts.

In 2019, Partners for Action hosted a research workshop in Toronto to spark discussion on these issues. We convened communications experts and representatives from municipalities, conservation authorities, emergency management groups, industry and academia to address important questions about how to communicate about flooding more effectively, through language, resources, outreach campaigns and initiatives.

The group explored questions such as: Who should be responsible for communicating this information? What are considered best practices? How should risk be communicated? What do fields such as community-based social marketing and behavioural economics tell us about communicating this information to the public in a way that inspires behavioural change? The report resulting from the workshop highlights eight principles of effective flood risk communication and practical challenges experienced by those working in the field. Communities and organizations across Canada seeking to develop or improve their flood risk communication outreach and communications will benefit from the report's findings.



P4A

### **Engaging and Empowering Youth with Educational Materials on Flooding**

In so many ways, Canadian youth are engaged in demanding action on climate change and its wide-reaching impacts. In 2019, we observed youth leading climate talks, protests and calls for action. Encouraging Canadian youth to learn about flooding in Canada – including its causes, its prevalence across the country and the importance of taking action to be prepared – is essential to our collective resiliency.

In 2019, Partners for Action partnered with Canadian Geographic and the Royal Canadian Geographic Society to develop bilingual educational materials on flooding. These unique resources are tailored to students in grades 5–12 and include a tiled map, infographic and companion lesson plans. Via Canadian Geographic, they are available to more than 20,000 educators and others seeking to inspire flood risk awareness.

### **Improving How We Communicate with Canadians about Flooding**

Today, governments, businesses and organizations across the country are endeavouring to more effectively communicate to Canadians about flooding, including how to reduce risks to themselves and their homes. Partners for Action is working to improve knowledge of how to encourage Canadians to pay attention to the myriad of risks that flooding presents and what they can do to improve their resiliency.

We have curated countless flood risk resources from around the world to improve knowledge on how language and messaging is used in order to more effectively incite action on flood preparedness and response at the property level. In partnership with communications experts, and leveraging principles and best practices of effective communication from disciplines such as risk communication and community-based social marketing, Partners for Action developed language and awareness-to-action messaging that takes into account common knowledge gaps and barriers to action. As part of this applied project, we are testing these materials with Canadians in communities that have experienced recent flooding. We are also making these resources available to practitioners, such as municipal flood risk communication personnel and the business community.





### **Building a Repository of FloodSmart Resources**

Building community resilience requires that Canadians be informed, aware and prepared to take action to reduce their flood risks. Partners for Action is equipping organizations and individual Canadians with a wealth of resources to drive action. FloodSmart Canada is a bilingual repository of flood awareness to action resources for Canadians. We have curated a wealth of materials, including resources on flood mapping, educational tools, emergency preparedness advice, flood insurance information, risk messaging and a social media communication kit. Since Partners for Action officially launched FloodSmart Canada in 2019, it has received more than 30,000 visitors. The launch was accompanied by a national advertisement campaign set to reach more than 600,000 Canadians.

# A Snapshot of What's Ahead

**PARTNERS FOR ACTION (P4A)**

## **Addressing Important and Complex Questions on Flood Resiliency**

Partners for Action will leverage the extensive and rewarding partnerships we have built with a diverse, network of national stakeholders to address questions on relevant flood resiliency issues affecting rural and urban Canadian communities.



### **Taking the Pulse of Canadians on Flooding: A National Survey**

Canadians in urban and rural communities continue to experience the devastating social and economic effects of flooding, and it is important that their voices are heard. In the coming year, Partners for Action will survey Canadians across the country to learn about their attitudes, values and beliefs related to flooding and flood risk management. The results will be used to inform policy advice for governments to better engage individuals and further enhance community flood resilience.

### **Exploring Transformative Change: Effective Property Buyout Programs**

Making Canadian communities flood resilient requires using a full range of tools to protect people and property. Together with diverse stakeholders from across Canada, Partners for Action is leading an applied research project on managed retreat from high-risk flood areas through property buyouts that move people out of harm's way. To implement buyouts effectively, decision-makers require evidence-based policy advice about how to design programs that maximize economic efficiency, political viability and social acceptability. This project will draw lessons from current and past buyout programs and highlight the trade-offs that governments must consider when designing new programs.

### **Empowering Canadian Communities with Awareness-to-Action Flood Information and Resources**

Partners for Action will explore how research on socio-economic vulnerability can be used to prioritize investment in flood risk reduction. We will develop and refine flood risk communication resources that will inform Canadians and encourage them to take practical steps to improve their awareness and reduce their flood risk. We will work with partners to host meetings in communities to reach Canadians directly. Partners for Action will continue to share what we learn with our stakeholders, including through a national webinar on best practices for flood risk communication and outreach.



# P4A's National Reach

PARTNERS AROUND THE COUNTRY

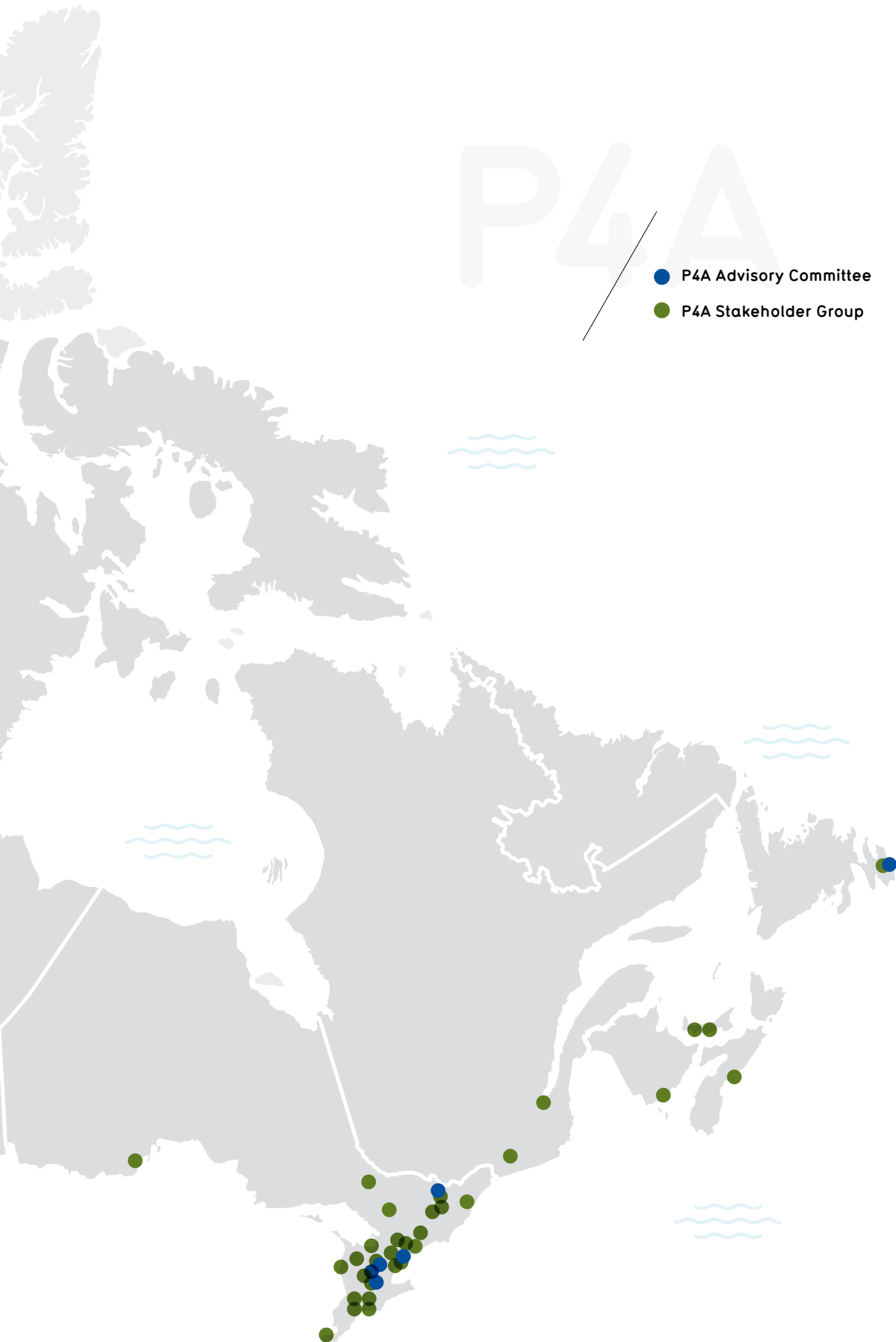




# P4A

● P4A Advisory Committee

● P4A Stakeholder Group





Connect  
with us



@Partners4Action

[uwaterloo.ca/partners-for-action](http://uwaterloo.ca/partners-for-action)

[www.floodsmartcanada.ca](http://www.floodsmartcanada.ca)



# Get Involved

## PARTNERS FOR ACTION (P4A)

To create a flood-risk-aware Canada, we must encourage collaboration between municipal, provincial, federal and Indigenous governments, non-governmental organizations, financial institutions, business and industry, and our citizens.

We need a diversity of perspectives, a culture of cooperation and mutual understanding and a lively and creative exchange of ideas.

Over the coming years, we look forward to meeting with Canadians to talk about flood risk and the barriers they face when trying to understand and reduce this risk. We look to our stakeholders to shape these conversations and to get the best information out to homeowners. We also plan to evaluate the success of our efforts, always with an eye towards the continuous improvement of our approach. We continue to expand our network of partners and stakeholders. Please join us and share our message with individuals and organizations interested in promoting climate resiliency. Together, we can build a better future.





## PARTNERS FOR ACTION

For further information regarding this report, please contact:

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