
AWARENESS TO ACTION: EFFECTIVELY COMMUNICATING FLOOD RISK TO CANADIANS

FINAL REPORT





Acknowledgement

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This project final report is presented to the Province of Ontario and the Government of Canada through the National Disaster Mitigation Program. Please note that the views expressed in this document are the views of Partners for Action and do not necessarily reflect those of the Province of Ontario or Government of Canada.



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INTRODUCTION

Flooding poses a serious risk to households and communities across Canada and is a major economic liability for both individuals and governments. In the spring of 2019, for instance, flooding in eastern Canada cost more than \$200 million in insured losses and damaged nearly 20,000 homes[1]. Since 2016, federal disaster assistance costs have averaged \$430 million annually, more than three quarters of which was attributed to flood-related disasters.[2] Despite the impacts of flooding, Canadians are largely unaware of their flood risk and fail to recognize that flooding will worsen in the future. Indeed, a 2016 survey showed that only 6% of Canadians living in designated flood risk areas know their property is at high risk, and only 21% believe that flood risk will increase within the next two decades.[3] With this limited awareness, it is perhaps unsurprising that fewer than 30% of Canadian homeowners have adopted basic property-level flood protection measures such as installing sump pumps, back-water valves, rain barrels or water resistant materials in basements.[4]

In this context, tackling Canada's flooding problem must involve ongoing efforts to improve public awareness of flood risk through outreach efforts. Given that Canadians are already inundated with information, it is critical to improve flood prevention and preparedness communication that encourages actions at the property level to reduce the impacts of flooding and improve personal safety in flood emergencies. Canadians must also be informed about ways to reduce their personal financial risk in order to reduce the costs of public disaster financial assistance. This project was designed to contribute to this effort by responding to the demand among Canadian communities and water and communication professionals for well-designed flood risk communication messages to improve flood resilience at the property and community level.



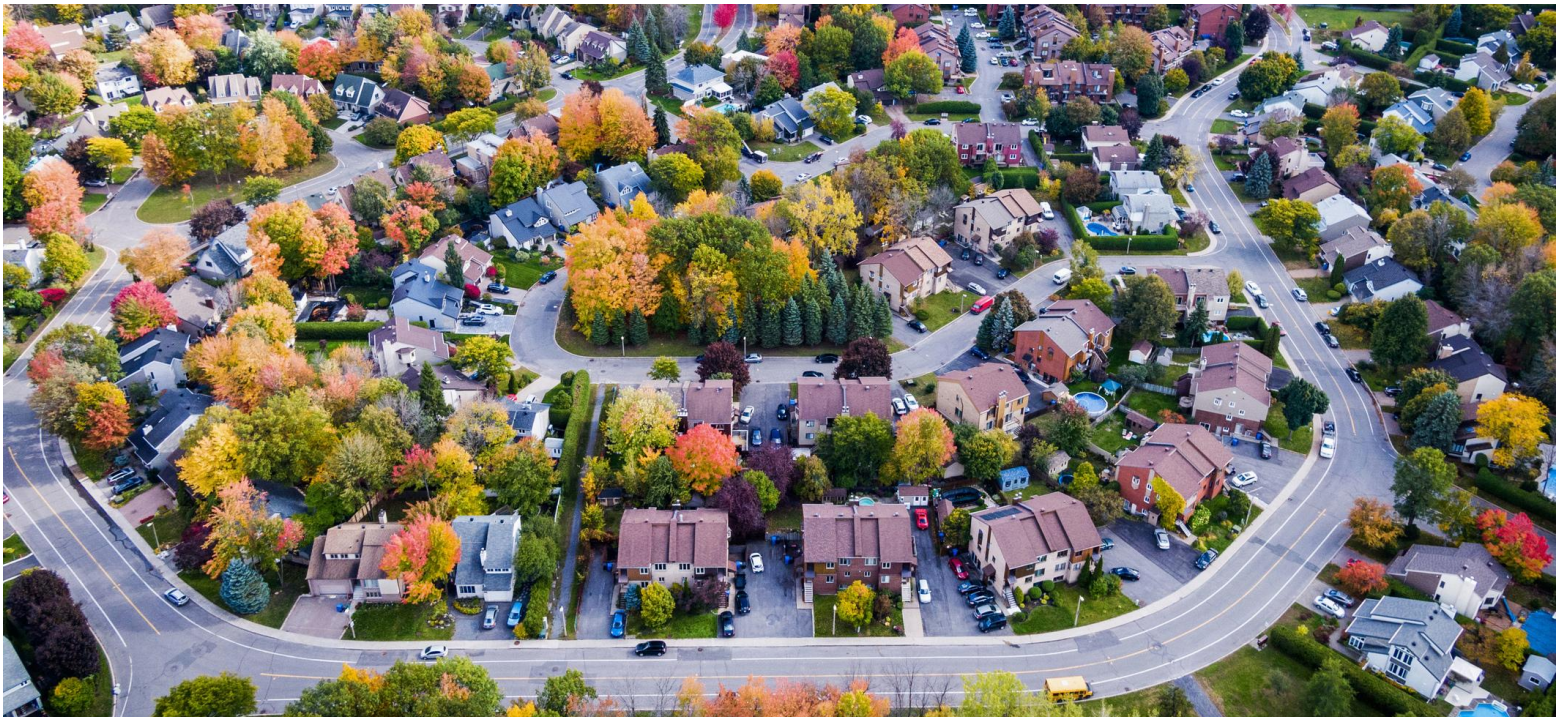
ABOUT PARTNERS FOR ACTION



Partners for Action (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.** For more information, visit: <https://uwaterloo.ca/partners-for-action>

PROJECT OBJECTIVE

The overarching objective of this project was to promote flood risk awareness and action to reduce vulnerability towards building safer and more resilient communities across Canada. To achieve this objective, Partners for Action developed and implemented a national flood risk awareness communication program, “How to Be Flood Smart”. In doing so, it leveraged the expertise of professionals in disciplines that include risk communication, community based social marketing, behavioural change and marketing, as well as the practical knowledge of water resources and emergency management professionals who are called upon to communicate with Canadians about flood prevention and preparedness. The research included developing flood prevention and preparedness messaging, preparing support materials and best practices, and promoting these resources to Canadians. To maximize these efforts, the materials and outputs of this project were also designed for active use by municipalities and other organizations after the completion of the project.



KEY OUTPUTS AND OUTREACH

To achieve the project's objectives, a series of interconnected activities were accomplished, which are described below. In addition, the following questions guided the team's evaluation of efforts throughout this work:

01

Do the messages and support materials reflect principles of effective communication espoused by experts consulted during the project?

02

Can the information and materials produced through the project be readily used by stakeholders and/or adapted for other audiences?

03

Are the project's promotional efforts timely and adequate to reach national target audiences?



I. WORKSHOP

To aid in the framing of the project's communication materials and outreach efforts, a one-day workshop was hosted in Toronto in spring 2019, entitled "Communicating Flood Risk to Canadians: Understanding the Challenges and Developing Best Practices". The purpose of this workshop was to convene experts from diverse fields of research and practice to explore how flood risk information should be communicated to encourage Canadians to take actions that increase property- and community-level flood resilience and reduce reliance on disaster assistance after floods. Participants were drawn from numerous sectors, including government, communications, conservation authorities, academia, non-profits and industry. In total, 40 subject matter specialists and practitioners representing approximately 30 separate organizations were engaged in the event.

In addition to enabling participants to share their knowledge, practical experience and recommendations for effective flood risk communication, the workshop was designed to challenge the group to consider new approaches. First, attendees heard from experts in the fields of community-based social marketing, behavioural change and risk communication to better understand evidence-based *principles* of effective communication within these respective fields. This portion of the workshop was intended to draw lessons from social marketing and behavioural economics about how people comprehend and internalize risk and to understand the reasons why current communication efforts fail to inspire action among the public (e.g., low uptake of property-level protection and insurance; misunderstanding of terms associated with flood risk). The experts explained that flood risk communication must adopt marketing strategies to effectively command peoples' attention amid the myriad of information sources they are subject to regularly.

Second, through an interactive panel discussion, participants discussed current *practices* and *challenges* of communicating flood risk. The group considered characteristics of messages that have been effective in spurring action among Canadians to increase their flood resilience, reasons why some messages are more effective than others, which audiences are being reached by flood risk communication and who is not being reached successfully. Finally, participants engaged in a small group discussions about optimal content for flood risk communication messaging, such as property-level protection actions that should be prioritized, how overland flood insurance should be promoted, effective communication methods and timing, lessons learned from successful and unsuccessful information campaigns, and ways to evaluate the effectiveness of flood risk communication. The substance of these activities was transcribed and analyzed, and was used for the project's remaining activities.

In addition to informing a series of priorities for flood risk communication messaging materials, the workshop resulted in a high-level report that outlined eight principles of effective flood risk prevention and preparedness communication. The report, "Communicating Flood Risk to Canadians: Understanding the Challenges and Developing Best Practices: Findings from a Research Workshop", was promoted widely across Partners for Action's national stakeholder network, social media channels, online platforms and through other partners, and it has been viewed nearly 2400 times.



II. EDUCATION MATERIALS

Canadian youth were identified early as an important target audience for flood risk and preparedness advice to inspire action to improve flood resiliency, so Partners for Action partnered with the Royal Canadian Geographic Society and Canadian Geographic Education to develop bilingual educational materials on flooding that were promoted to 20,000 educators in Canadian schools. According to emergency management and communications professionals engaged in this project, youth are an important voice in Canadian households. Because they communicate what they learn with adults in their life, teaching youth about steps to reduce flood risk can spur household flood resilience. These education materials were designed for youth in grades 5 through 12 but are also suitable to disseminate to the general public.

A colourful and printable tiled map was created to illustrate approximately 500 flooding events that have occurred across Canada's provinces and territories, including those caused by ice jams, snow melt, storms, severe thunderstorms and hurricanes over a 118- year period. "How to Be Flood Smart: Canada's most common natural disaster" is a colourful and effective infographic, which depicts actions that emergency officials recommend to take prior to, during and following a flooding event. Considerations were made to ensure this resource would not inundate students with excessive information and to ensure that it was memorable by reflecting youth in the context of flooding and by putting forward simple action messages.

Four *learning packages* were designed, each targeting a specific segment of this youth group, with interactive and critical thinking and discussion exercises for individual and larger group settings. The learning packages also included exercises that enabled students to critically engage with the content from the other educational materials in this series, which include the infographic and map. "How to Be Flood Smart: Sharing information through public service announcements" (grades 5-8) enables students to examine preparedness actions they should take prior to and following a flood and how to respond to emergency preparedness announcements that are typical of a flood emergency in their community. "Floods in Canada: Identifying and interpreting flood occurrences" is designed to teach students (grades 9-12) to understand why some communities and regions are vulnerable to flooding and about the actions they can take to reduce their risks before, during and following a flood.



floodsmartcanada.ca/educational-resources-on-flooding-in-canada

Students also learn about high-impact floods and their physical and economic impacts on affected areas. Conceptual research and creative learning exercises in this package are intended to give students confidence in their presentation skills. "Floods in Canada: Causes, effects and regional patterns" (grades 5-8) teaches students how to identify and distinguish Canadian flood events and their various causes. Students develop critical thinking skills to interpret a flood map and to recognize how flood risks are affected by geography of region. "How to be flood smart: Communicating creatively with infographics" (grades 9-12) is designed to teach students about actions associated with flood preparedness and response, while developing critical thinking and presentation skills in examining and visualizing flood risk using infographics.

Throughout 2019 and into March 2020, these education materials were (and will continue to be) promoted widely by Canadian Geographic Education to all educators across Canada (approximately 20,000) via its regular newsletter, social media feeds and website. Promotion efforts by Partners for Action to date have been disseminated via its stakeholder network, social media accounts, and meetings, resulting in approximately 8,400 views of these materials. These promotional efforts will continue after project completion.

III. FLOOD RISK COMMUNITIES & PILOTS

Data from the Flood Damage Reduction Program was used to identify target audiences for flood risk messaging, and to select communities for piloting the messages and support materials. Communities that had experienced flooding within the previous five years, as well as the causes of flooding and potential future flooding challenges, were assessed to develop a short-list of potential pilot project locations. For the purposes of this project, information was gathered from these communities in the form of interviews with experts in, for example, communication, emergency preparedness, and flood management. Information was also gathered from members of the public within a formal focus group setting to better understand barriers to flood prevention and preparedness action at the property level and to obtain specific feedback on messaging and other related communication materials developed for this project. For instance, participants provided feedback on language and terminology, images, preferred format and outreach methods, and comprehension of the specified action and the underlying or explicit justification for taking it.



In addition to obtaining useful data in the form of feedback on the actual flood prevention and preparedness messaging, the pilots generated useful findings about the way in which members of the public interpret standard instructions regarding flood prevention and their preferences for how to receive it. The specific findings are discussed in the messaging report prepared for this project; however, it is worth noting a few key highlights here. Flood prevention messaging efforts would benefit from taking a marketing approach in order to be more effective in reaching Canadians. Individuals wish to see themselves and needs reflected in the messaging and, whenever possible, consideration should be made to ensure that messages and materials are tailored to a more targeted audience. For example, communities with an older demographic should consider presenting content that addresses this group's barriers to taking action and it should reflect them in the materials. Disseminating generic information on flood prevention and preparedness can result in people ignoring the communication and not taking action. In addition, the timing and format in which it is presented contribute to its effectiveness.



Focus Group Activities



Flood resiliency at the property level requires that individuals take a variety of actions and repeatedly each year. Undertaking effective communication efforts to address these actions and at the optimal time then also requires a concerted effort to disseminate materials during times that coincide with memorable milestones throughout the year. Finally, disseminating flood risk and prevention messaging and other communication materials with and through trusted sources is essential. Members of the public look to the officials in their municipality for trusted information on flooding, including property level and community-level prevention and response. Leveraging trusted sources within the municipality, such as the fire department, which one of the communities included in this project had done or by arming public works staff with relevant and consistent messaging - to share flood prevention and preparedness information should they encounter questions from members of the community - can be effective.

IV. FLOOD PREVENTION & PREPAREDNESS MESSAGES

A series of flood risk prevention and preparedness communication materials, including individual messages, was developed and promoted widely to target audiences and the public. Following a review of flood risk reduction and preparedness communication resources in Canada and North America, and building on previous primary and secondary research on this subject, new information on effective flood risk communication was gathered through interviews, public consultation, formal research group discussions and consultations with subject matter experts and communications professionals.

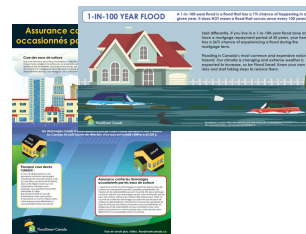
The bilingual materials were developed by leveraging principles of effective communication drawn from fields such as community-based social marketing, which seeks to encourage behavioural change by employing insights from psychology and social marketing. The messages and materials that were developed encourage actions to reduce personal financial risk associated with flooding, such as understanding the role of insurance and disaster assistance, undertaking basic property-level actions known to reduce flood risks and interpreting the sometimes confusing terminology used to describe flood risk (e.g., the “100-year flood”). The format includes (1) standalone messages that can be used in a variety of dissemination platforms, including social media and websites, (2) infographics, (3) seasonal flood prevention tip sheets, (4) a social media kit for communicating bite-sized awareness-to-action messages and (5) checklists that which can be refined and disseminated in print or online.

It was necessary to evaluate and refine many of these materials at several points in the project, which included a minimum of two iterations before the information was tested with members of the public (community pilot) and in consultation with subject matter experts (e.g., community based social marketing, emergency management) and again following the test with members of the public. Please note that these resources are available for download and distribution in English and French and in a format suitable for editing to the user’s needs. For these and additional messages, please visit: <http://floodsmartcanada.ca/floodsmart-resources/>

1 / Standalone Messages



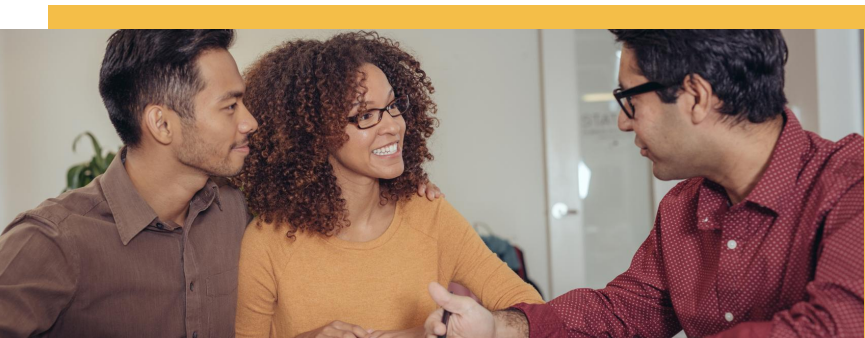
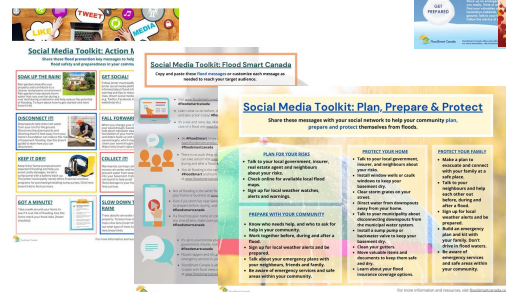
2 / Infographics



3 / Seasonal flood prevention tips



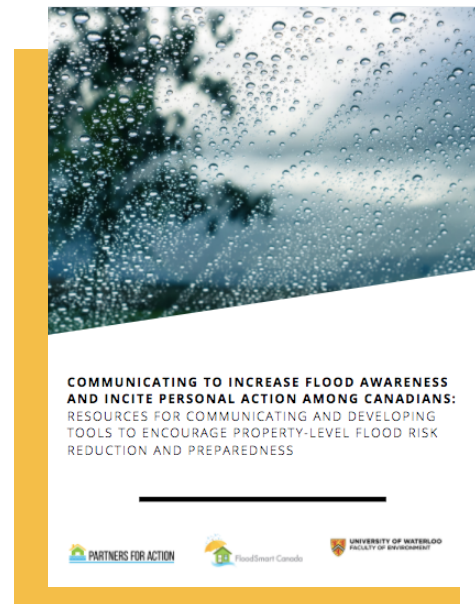
4 / Social media toolkits



5 / customizable checklists

The project's specific recommendations for developing and disseminating awareness-to-action flood risk prevention and preparedness information are outlined in a plain language report entitled “Communicating to Increase Flood Awareness and Incite Personal Action Among Canadians: Resources for communicating and developing tools to encourage property-level flood risk reduction and preparedness”. The report is available at: <https://uwaterloo.ca/partners-for-action/current-projects/communicating-flood-risk-canadians>. In brief, characteristics or principles of effective flood risk prevention and preparedness messaging include be. [5]

- 1 **targeted:** based on an understanding of the target group's characteristics (e.g., demographics, housing type), messages should be customized to ensure relevance to the audience;
- 2 **straightforward:** messages should include specific actions that individuals should take and explain why these are important;
- 3 **understandable:** rather than using technical terminology (e.g., 100-year flood), flood risk should be expressed over a meaningful time period, such as a 25- or 30-year mortgage lending period, to make it more understandable to a non-expert audience;
- 4 **written in non-technical language:** considering the modest literacy and numeracy skills of Canadians, messages should be written using non-technical plain language to ensure broad understanding and avoid confusion;
- 5 **positive in tone:** messages framed with an optimistic and hopeful tone are more likely to capture public attention and persuade people to take protective action;
- 6 **delivered through a trusted source:** partnerships with employers, non-governmental organizations and the media, which are among the most trusted sources of information in Canada, could increase the impact of flood risk communication;
- 7 **designed to leverage social norms:** publicizing the actions taken by community members would help to induce others to act, because people are often motivated by observing the behaviour of others; and
- 8 **tailored to flood type:** in light of information overload, communication should be limited to key messages that are most relevant to the dominant flood type a community faces

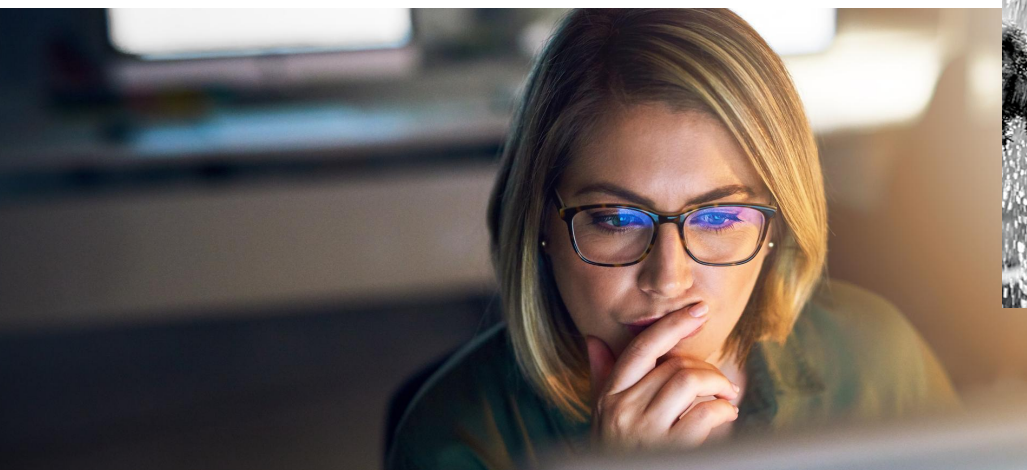


The communications materials were promoted widely and in varied formats, including on P4A's project site *FloodSmart Canada*, social media (Twitter and LinkedIn), as well as through our national stakeholder network via electronic newsletters and other partners. A national advertisement was placed in the *National Post*, which was estimated to reach approximately 600,000 readers (print and online), and was hosted on national marketing website, where it garnered an additional 1000 views from visitors in Ontario (42.8%), Quebec (23.5%), Alberta (8%), and British Columbia (7.1%). Interestingly, we learned that 64% of the audience viewed the content on mobile devices. In addition, viewers of this content spent almost 3 times longer viewing it on their mobile device than the average (avg. = 20-30 seconds), which may demonstrate the effectiveness of the messages in attracting and holding viewer attention. Materials were shared with communities, such as pilot communities, neighboring communities and also communities from outside Ontario. The materials were also made available to insurance representatives in Ontario by way of a provincial advertisement (1-page) that encouraged readers to access and share these resources with their members and clients. These dissemination efforts achieved an estimated 7000 views (not including the *National Post* ad, for which viewership data were unavailable).

V. NATIONAL WEBINAR

The national webinar included an overview of the challenges the project identified associated with communicating flood risk to Canadians, such as overcoming information overload, explaining complex flood risk reduction measures, reaching different demographics and alternative methods for explaining flood risk. It also presented suggestions on how to address common challenges, informed by original and secondary research conducted by Partners for Action on effective flood risk communication and public engagement.

As part of this presentation, viewers were provided with practical advice on how to design flood risk communication material and on effective outreach and promotion efforts, based on findings from the project's activities, including the pilot projects from Ontario. Participants were also shown and encouraged to use the publicly available, bilingual flood risk prevention and preparedness materials developed during this project term. The webinar was designed to be useful for those working in communities (municipalities, non-government organizations, private sector) and for those interested in flood risk communication more broadly. The presentation was delivered virtually before the 2020 flood season and provided in written format to representatives from Partners for Action's stakeholder network. The webinar received positive feedback from the community and has since resulted in two invitations to repeat the presentation to a national audience. Elements of its content will also be shared with representatives of the insurance industry following the completion of this project.



FUTURE CONSIDERATIONS AND RECOMMENDATIONS

An important principle of effective communication, which was reinforced over the course of this project by experts and members of the public, is that Canadians are more likely to pay attention to information that is tailored and relevant to them. Although customizing messages to specific audiences might be unfeasible at a national scale, local officials are well-positioned to understand the specific flooding characteristics of their community, identify unique challenges the community faces (e.g., state of infrastructure; demographic profile) and target messages accordingly. However, public education and outreach regarding flood prevention and also preparedness is often under-resourced, leaving many to do elements of this work without the required resources and capacity. Therefore, greater financial and logistical support for communities to both develop and advance flood prevention and risk awareness communication and outreach efforts is necessary to advance flood resiliency.

Partnerships between organizations committed to flood preparedness and resilience are critical to align and expand flood risk communication efforts that reach a broad audience in Canada. By regularly disseminating flood risk communication messages through professional and virtual networks, and via multiple channels, partners can ensure that Canadians in all parts of the country are aware of flood risk and knowledgeable about actions they can take to reduce their exposure and vulnerability to its impacts. Specific recommendations regarding the development and implementation of effective flood risk prevention and preparedness communication are outlined in detail in the project's report, "Communicating to Increase Flood Awareness and Incite Personal Action Among Canadians: Resources for communicating and developing tools to encourage property-level flood risk reduction and preparedness". The report is available at: <https://uwaterloo.ca/partners-for-action/current-projects/communicating-flood-risk-canadians>



CONCLUSION & OUTCOMES STATEMENT

The materials produced in this short project were engaged with more than 18,000 times by people who accessed them via social media, advertisements, websites, presentations and newsletters. Although confronting flood risk requires a broader strategy that engages a wide range of stakeholders, improving awareness of flood risk among Canadians and effectively engaging them in its management is critical for improving flood resiliency. Regular flood risk messaging that is informed by principles of effective communication will advance this awareness and encourage more preventative and preparedness actions among Canadians.



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