HazNet

The Magazine of the Canadian Risk and Hazards Network

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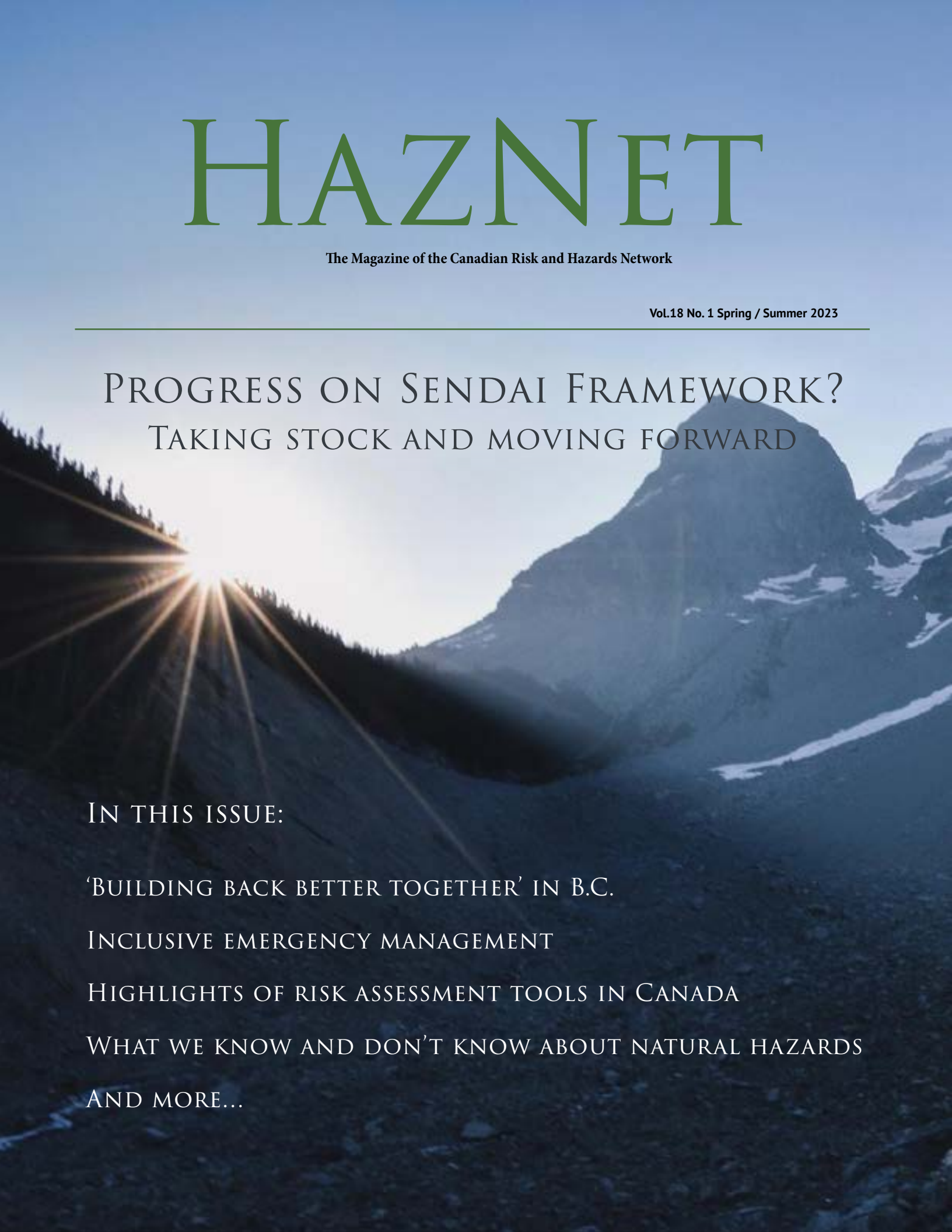
Progress on Sendai Framework?
Taking stock and moving forward



In this issue:

'Building back better together' in B.C.

Inclusive emergency management

Highlights of risk assessment tools in Canada

What we know and don't know about natural hazards

And more...

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Land acknowledgement

HazNet would like to acknowledge that it conducts its business on the traditional and ancestral lands of the First Nations, Inuit and Métis Peoples of Turtle Island, known as Canada.

HazNet is committed to reconciliation, including learning about and regularly acknowledging the historic and current relationship that exists between the unceded land on which we live and work and the First Nations, Inuit and Métis. Indigenous Peoples are the longest inhabitants and stewards of this land on which we all live and learn, and have long been using sustainability to mitigate risks and reduce the impacts of hazards.

We recognize that there are many ways of knowing, and strive to represent these ways in the material that we bring to you. We also encourage all our readers and contributors to consider how they can personally contribute to Canada's reconciliation with Indigenous Peoples, by continuing to call out the continued use of colonial systems and processes in our field, and hold each other accountable to commit to action.

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Cover image: The sun sets on the Joffre debris flow during a heat wave, much like the one that led to the face of Joffre sliding just years prior. Geologists have directly attributed this slide to permafrost degradation made more extreme by climate change. Photo by Nicole Spence, taken August 2022.

President's Message

This year, in 2023, CRHNet celebrates 20 years as the leading Canadian disaster risk management community. As I reflect on this, I think about all the reasons that CRHNet has been able to reach this important milestone. Like my own personal motto (also tattooed on my person as a permanent, grounding reminder and outward celebration), I believe that CRHNet's success can be summed up in just three words: courage, wisdom, and luck.

Courage to have great leaders with foresight to identify a gap in our evolving field of practice and study and create this amazing organization to bring together committed people to share ideas and knowledge that will help to make Canada a safer, more resilient country in the face of disaster risks. I want to personally acknowledge this courage and thank our past presidents Larry Pearce, David Etkin, Emdad Haque, Ron Kuban, Ernest MacGillivray, Michel Dore, Patricia Martel for their leadership. You all demonstrated courage and strength through your leadership and advocacy for CRHNet over the years, and your legacy lives on with the emerging professionals of tomorrow, who have been equally inspired by your work. I also would like to acknowledge the long-standing contributions of Marion Boon, for all of her work in helping CRHNet become what it is today, and all previous board members.

Wisdom to know that we are stronger together, only when we have people working across their organizational/geographical structures and boundaries to collaborate and innovate so that we can better address the myriad of challenges that we all collectively face. We also need to be committed to always learning, which means acknowledging that just because we did something a particular way in the past, does not at all mean that is correct for our future. We know more now than we did before about disaster risk management, and we need to embrace change in order to adapt. This includes acknowledging the importance of learning about, and embracing, the ways of knowing of Indigenous Peoples in Canada.

Luck in that timing is everything. We have had the right people involved in our organization, at all of the right times, and we have been able to take incredible ideas and turn them into great opportunities to share, as we have seen with HazNet, and its incredible success realized by the creative geniuses of Lily and her team, who have seized the opportunity to use storytelling and art as a way to educate, inspire action, and inform discussions. We have seen many changes in our boards, but with each new iteration, we get new energy and ideas, and we have been enabled by the systems that placed people and their knowledge in CHRNet's path. We have also managed to survive the shocks and disruptions that came with events like the pandemic, thanks to our good fortune of having dedicated members, partners, and sponsors who supported us along the way. We also continue to have access to some great talent and minds, both on our board, and within our membership, and we are indeed lucky to have had such incredible, resilient individuals who were able to contribute to building, sustaining and growing CRHNet over its history, and into its future.

So, although we should always honour and celebrate our history, we need to also be able to clearly focus our attention on what lies ahead. My hope for CRHNet is that we continue to be the trusted network of networks for all emerging professionals in the DRR and climate change adaptation space for many years to come. I hope that our organization continues to grow and become more inclusive of the stakeholders who have historically been underrepresented in risk reduction and climate resiliency, like those experts working in critical infrastructure, urban planning, engineering, information technology, and social sciences. Even more so than these specializations, I hope to see us disrupt the status quo and recognize multiple knowledge systems. The predominant western schools of thought that have shaped our field are only just starting to understand and appreciate the depth and significance of Indigenous Knowledge, held by the longest inhabitants and stewards of this land on which we all live and learn. My hope is that we can develop stronger and more collaborative partnerships to work alongside and with Indigenous Peoples to build a better and more resilient Canada. I hope that we continue to mentor and support our next generation of DRR leaders, while also acknowledging that the challenges they face may not be the same as the ones that we were focused on in our careers, so that the learning can be a mutually beneficial experience. Mostly, I hope that we continue to evolve as a community of practice, to become a fully recognized professional discipline, with appropriate positions being created across all sectors to ensure that DRR, climate change adaptation and resilience are front and centre in all development decisions, plans, and initiatives.

As an action-oriented individual, I am excited about the opportunities that await us to translate research and theory into practice, and to have current and future practice inform our research, in a way that considers the unique nuances that persist in our communities and organizations, so that we can achieve realistic, measurable, and meaningful results in resiliency-building today, instead of "someday." We need a collective and concerted effort to demonstrate and celebrate progress in achieving our goals, and I believe that CRHNet has a significant role to play in this regard.

This is why I am so excited about this year's Symposium event, planned for October 24-26 in Edmonton, Alberta, (which is Amiskwacîwâskahikan), Treaty 6 Territory. We are planning an event that will enable relationship building, innovation and idea sharing, and most importantly, learning that can be applied once our participants go back to their respective communities and organizations. We can't do this though without your participation as facilitators, disruptors, innovators, and conversation starters, as well as active and open-minded participants in an experience that will be more inclusive and engaging than a typical symposia-style event. If we are acknowledging the need for change, we know that we need to be willing to lead change, and it is our intention to offer the type of programming that aligns with the requirement for better, and different, stakeholder collaboration that has been identified as being critical in our efforts to enable DRR as a function and practice across all sectors, rather than just a framework.

I hope to see you all as participants at this year's event in Alberta, which is not only my home province, and a source of great pride, but also the place where we hosted our first CRHNet event 20 years ago. It will be both a celebration and a source of inspiration so that we can keep on doing the good work that needs to be done. Please continue to check the CRHNet website for more details on this event as they become available.

As always, please enjoy this edition of HazNet and consider ways in which you can contribute to future articles. Remember as well to renew your membership, update your member profiles, and check out our events calendar to see what other events and opportunities are coming up.

With thanks,

Jodi Manz-Henezi, BSc, BA, MA-DEM

President, CRHNet

Emerging Professionals

In 2022, CRHNet rebooted the Emerging Professionals (EP) Committee, expanded it from a one-person team to a thriving community of driven individuals. Our goal for revamping the committee was to create a national community for students and EPs entering the field of disaster risk reduction (DRR) and disaster and emergency management (D&EM), to provide a platform to elevate their voices, and to create meaningful opportunities for professional and personal development. With social and climate change-related hazards on the rise, the DRR and D&EM field is growing at an unprecedented rate. With this growth the need for a national community of EPs has never been more pressing. From all of us at the EP Committee, we would like to express our gratitude for your unwavering support throughout this incredible journey!

Since our relaunch, the EP Committee has grown to include approximately 20 members spanning from British Columbia to Nova Scotia. We proudly represent members from prestigious schools such as Royal Roads University, York University, Northern Alberta Institute of Technology (NAIT), Vancouver Island University, Justice Institute of British Columbia (JIBC), and Brandon University. Our team has already hosted several successful events including a workshop to discuss the direction of DRR in Canada, and a panel night on El Niño-Southern Oscillation. And the conversation continues with the newly launched Discord server that has already amassed around 100 members. We are excited to announce upcoming events such as Mental Health focused Yoga sessions, Utilizing Games for Research, and many more! Don't want to miss out? Check out the upcoming events on our event calendar.

Moving forward, our focus for 2023 and beyond is centered around several key objectives: fostering community and collaboration throughout Canada; advocating for students and EPs; creating meaningful opportunities for both professional and personal growth; and ensuring the long-term sustainability of CRHNet. We appreciate your continued support in attending events - including the 2023 symposium, joining as a CRHNet member and engaging with us on Discord and social media. Together, we are confident that the EP committee will thrive and achieve its mission to empower EPs entering the field of DRR and D&EM.

Thank you again for being a part of this amazing journey!

Sincerely,

Sarah Cowan and Nathan Innes

Co-Chairs of the Emerging Professionals Committee

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CANADIAN RISK & HAZARDS NETWORK

Editors´ Note

Recently many of us watched as David Suzuki said his final goodbye after 44 years of hosting "The Nature of Things," the CBC cornerstone that influenced many of our childhoods or careers, directly through his calls to become global citizens, at arms length through his community-minded work, or indirectly through the many policies he helped move forward throughout the years. While watching his final send-off that highlighted some of his favourite moments throughout his tenure, gray hairs marking the passage of time, it's hard not to feel a sense of helplessness as we face some of the greatest threats to our planet ever - despite champions like him sounding the alarm for decades. Yet, it was also inspiring, seeing his tenacity in the face of neverending setbacks, and hearing his optimism: "Nature might surprise you. She does some things that are harmful, but she also does some things that are good," referring to the 2022 Sockeye Salmon run up the Fraser River - the highest in over 100 years.

One of David's key reflections included an interview with Mike Richardson, Haida Nation, who poignantly states that we need climate-related decision-making to move away from politics and politicians. His point speaks directly to the second goal of the Sendai Framework, strengthening disaster risk governance to manage disaster risk. We know that most interventions to reduce risk require policy-level change, often requiring decades to fully implement and reap the benefits. This is inherently incongruent with the Canadian political system, which is focused on short-term wins to secure an election. Mike and his ancestors have lived the principles of disaster risk reduction for millenia, yet the Western world needs a framework to hold itself accountable to the shared responsibility of reducing disaster risk.

In 2015, the Sendai Framework for Disaster Risk Reduction, 2015-2030, set out four priority areas for action to reduce the impacts of disasters on mortality, communities, and the economy, and to strengthen disaster risk reduction:

1. Understanding disaster risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

As we mark the halfway point of the Sendai Framework in 2023, this issue takes stock of the progress we have made so far. In truth, we found it hard to pull together an issue that would reflect the true current state. Perhaps it was due to burnout or the ongoing disruptions we are all facing post-pandemic, or perhaps it was due to the extremely complex topic of disaster risk, but one thing was not clear: no one seems to agree. With that in mind, we narrowed our focus to the first priority, to help create a common baseline - to understand disaster risk.

Our hope is that from this baseline, we can carry on the conversation to examine the other priorities. Just as David passed on the torch to the next generation, we need to carry on the conversation and address all priorities of the Sendai Framework.

So, let's first understand disaster risk.

Our **feature section** begins with an **interview** with Dr. Ellen Prager, a researcher and science communicator who discusses the current state of the scientific understanding of disaster risk - what we know, what we wish we knew, and what we can do about it. From there, we feature four national-level risk assessment tools to showcase Canada's progress towards understanding risk. These include the Risk Profiler (earthquake risk), the Flood Hazard Identification Mapping Program (flood risk), Climate Data (climate trends), and the Social Vulnerability Index (indicators of social deprivation that may contribute to vulnerability to disaster impacts). Although these snapshots are not comprehensive of all risk assessment initiatives and focus only at the national scale, they provide concrete examples of the state of understanding disaster risk in Canada.

Although we often focus on natural hazards when conducting risk assessments, 2022 saw the first invocation of the Emergencies Act in Canada through the declaration of a public order emergency in response to the Freedom Convoy and related efforts to disrupt borders and blockade major transportation corridors. Our **lessons learned** section includes an article examining this historic moment for emergency management in Canada and considers some implications for the future.

Our **policy** section features an article highlighting the creative ways municipal governments are improving the resilience of infrastructure, in part through conducting risk assessments that can help unlock funding from other levels of government, in response to the increasing impact of disasters and the risks posed by a changing climate. In a pointed analysis, the (lack of) progress in supporting Indigenous Peoples to reduce disaster risk is highlighted as a major failing along the path to implementing the Sendai Framework, along with concrete steps for how to improve.

In our **research** section, one article posits replacing the concept of "resilience" with that of "ruggedization", arguing that resilience is too often tacked on to existing policies without changing a failing system, whereas ruggedization conveys the urgency and depth of resolve required to prepare communities for the future. The potential for collaboration between governments and insurers to expand the availability of flood insurance to Canadians in high-risk areas is also explored, as an important tool to address the rising costs and impacts of flooding on Canadian communities.

The **practice** section features a powerful message from Tribal Chief Tyrone McNeil on the work of the Emergency Planning Secretariat, an organization supporting Mainland Coast Salish First Nations in all-hazard disaster management, and the Indigenous-led Build Back Better, Together initiative launched after the devastating floods in the lower mainland of British Columbia in 2021. In this video, Tribal Chief McNeil emphasizes the importance of nature-based solutions in strengthening the resilience of infrastructure and communities to disasters. Building on the theme of collaboration and inclusion, we explore the barriers created when people in emergency management use acronyms, and how this contributes to confusion, misunderstandings, and alienation for people who are new to emergency management or to the organization. It contributes to the sense of "insider" vs "outsider" when effective emergency management is based on collaboration and collective action. Finally, long-time disaster researcher and co-founder of the Canadian Risk and Hazards Network Dave Etkin shares some practical resources for how to understand and apply ethics in emergency management, and why it is so important to address this under-appreciated and under-studied aspect of the field.

While it may seem daunting, we know the work has to start somewhere. As Martin Luther King Jr. said, "If you can't fly then run, if you can't run then walk, if you can't walk then crawl, but whatever you do you have to keep moving forward."

Carly Benson, Editor

Nicole Spence, Editor

Lilia Yumagulova, Editor-in-Chief

HazNet www.haznet.ca

The **CRHNet Awards Program** is a national awards program established to recognize and honour individuals participating in and contributing to the study and practice of disaster risk management. Recipients of the 2022 CRHNet awards were celebrated last January for their exemplary contributions to the field. The winners all demonstrated strong leadership in their respective organizations; the CRHNet Board of Directors and awards committee is thrilled to recognize their active engagement within our community. Learn more about each of our winners below.

2022 Awards CRHNet

The Larry Pearce Education Award

The Larry Pearce Education Award is offered by CRHNet members to deserving post-secondary students undertaking studies in any discipline related to Canadian disaster risk and/or emergency management. This competitive award is intended to encourage innovative disaster risk management work in Canada and defray the post-secondary education costs for recipients in the year the award is granted. Accordingly, recipients must be enrolled in full-time studies in the year in which the award is given.

1st place: Aidan Osborne

Aidan is currently enrolled in the Disaster and Emergency Management program at the Northern Alberta Institute of Technology. Outside of the classroom, Aidan has been pursuing a research opportunity with the RCMP to critically evaluate and assess the capacity and capability of the civilian aircraft to facilitate and assist with search and rescue efforts in Alberta, drawing on his personal experience as a pilot. Aidan has also worked in close collaboration with the Canadian Red Cross, initially as a responder with the Emergency Response Team and currently serves as a volunteer Personal Disaster Assistance (PDA) Responder.

2nd place: Willow Weber

Willow is an undergraduate student in the Disaster and Emergency Management Program at York University. Under Willow's leadership, her program's student association hosted several training opportunities, speaker events and the first fully virtual Career Day for the program's students. She was able to accomplish this while maintaining a high level of academic achievement and was the recipient of the Dean's Award for Research Excellence for her work on the adoption of wildfire mitigation measures. Outside of school, Willow is also a member of the Emerging Professionals Committee for CRHNet where she leads the Event and Professional Development project team.

3rd place: Jennifer Gates

Jennifer is a Disaster and Emergency Management student at the Northern Alberta Institute of Technology. Since starting her degree in the height of the COVID-19 pandemic, she has embraced learning new skills and leveraging development opportunities while balancing a busy family life and a career as a health and fitness professional. While enrolled in Disaster & Emergency Management courses from December 2020 to June 2022, she also assisted Alberta Health Services as a team lead responsible for sub-teams of COVID-19 case investigators. Her teachers at NAIT referred to her as "the epitome of the type of professional we need in this field of practice to lead the challenging work that still needs to be done."

Marion Boon Mentorship Award

The Marion Boon Mentorship Award was established in 2020 to recognize exemplary mentorship and leadership in the field of disaster and emergency management. This award was created to acknowledge individuals who have demonstrated a commitment to supporting the development of emerging professionals through advocacy, collaboration, and the transparent sharing of learning, experiences, and ideas. It was named after Marion Boon.

Winner: Rachel Mouncey

Rachel is Director of Emergency Management with Air Canada. Rachel began her journey with Air Canada in February 2020 and has been noticed for her impeccable work ethic and growth with the company. She has been dedicated to working with her colleagues through the arduous hours of COVID-19 response in the early stages of the pandemic, including during hours of laborious work with regulatory groups, guidance, contact tracing, and updating policies and procedures. Rachel embodies what it means to be a mentor and more. She has taught new team members about the world beyond the four components of preparedness, mitigation, response, and recovery and has led by example and not from a position of hierarchy, but relatability, compassion, and empathy. On numerous occasions, she has demonstrated her passion for sharing knowledge with the new generation of emerging professionals.

Canadian Disaster Risk Management Volunteer Award

The Canadian Disaster Risk Management Volunteer Award is presented annually to nationally recognize extraordinary and exemplary volunteerism in the advancement of Canadian disaster risk management. This award is supported by CRHNet membership to encourage disaster risk management volunteerism and to profile exceptional contributions through volunteer work, volunteer initiatives, and volunteer programs. Up to three awards are granted annually.

Winner: Lilia (Lily) Yumagulova

Lily is the Program Director for the Preparing Our Home Program, an award winning Indigenous community resilience planning program and Editor-in-Chief of HazNet, where she has contributed to the growth and development of the magazine over the past seven years. Her dedication to HazNet over the last years has helped bringing Canada's resilience story to life through her vision, transforming words, stories, and art into a reputable and quality publication that is highly regarded by the DEM community. When the world was reeling from the pandemic, Lily helped highlight the silver linings; and when we felt full of despair after cascading and compounding emergencies, Lily highlighted art as a form of resilience, bringing colour to our bleak days. Those who had the chance to collaborate with her praise her for her selfless nature and endless contributions to the field. She has been a mentor to many and her words have empower and uplift her peers in a way only a passionate leader can. Those lucky enough to work with her get to witness her expertise and compassion not only for emergency management and disaster risk reduction in Canada, but for the communities that we strive to serve.

T. Joseph Scanlon Lifetime Achievement Award

The CRHNet T.Joseph Scanlon Lifetime Achievement Award is the organization's highest honour and is named after the late journalist, researcher, and professor T. Joseph Scanlon, for his lifetime contributions to disaster risk management. The award is presented annually to recognize the lifetime contributions and achievements of exemplary individuals to the enhancement of Canadian disaster safety. Eligibility for this award is open to all Canadians, and recognizes individual service to public safety through disaster management practice, research, education, and leadership.

Winner: **Stephen (Steve) Carr**

Steve's contributions to Canadian public safety go back decades and commence with his service in the Canadian Armed Forces, beginning in 1990. Following his service, he brought his operational and leadership skills to the field of disaster and emergency management when he began his work with the Alberta Emergency Management Agency (AEMA) in 2011. Through the last decade, Steve has held many leadership positions through his time at AEMA, and currently leads the Field Operations team in the capacity of Director, Field Operations mentorship, friendship and support.

To summarize Steve's accomplishments and contributions to the Canadian emergency management field is no small task. His work demonstrates his commitment to operationalizing best practice and continuous improvement, fostering innovative approaches to reduce disaster vulnerability. Some notable contributions of his career include his leadership in establishing a consistent incident management system throughout the province of Alberta, his work to support the development of the All-Hazards Incident Management Team program in the province, building regional response capacity and his development of the AEMA First Nations' Field Operations initiative, which directly supports First Nations' disaster resiliency at the community level through information sharing, collaboration, education, training and capacity building. However, more than the long list of tangible work Steve has led, developed, and championed over the years, his contributions to inspiring and empowering his fellow emergency management professionals shine most brightly. His leadership during some of the most significant responses Alberta has seen have set the bar for crisis leadership for his colleagues.

Do these recipients sound like someone you know? Nominate your friends, colleagues, and peers through the CRHNet Awards Program page on CRHNet.

2023 CRHNet Symposium:
Disaster Risk Reduction - Past, Present, Future

By Ramona McVicker

The future of disaster risk reduction requires ongoing collaboration and coordination among various stakeholders including governments, communities, organizations, professions, and the private sector. Collective action and practiced adaptation and change are crucial for effectively reducing disaster risk over time.

The symposium calls for facilitators, conversation starters, disruptors, and innovators to foster change and make progress in disaster risk reduction. The symposium days are organized based on four priorities for action listed in Sendai, namely understanding disaster risk, strengthening disaster risk governance, investing in disaster reduction for resilience, and enhancing disaster preparedness for effective response and to "build forward better" in recovery.

The symposium aims to transfer knowledge, build relationships, and exchange best practices among participants. The high-level themes that guide the types of contributions are related to Canada's attempt to "accelerate whole-of-society action on DRR" through the development of the Emergency Management Strategy for Canada: Towards a Resilient 2030.

We are not doing a callout for abstracts per se, but for individuals and organizations who can contribute to focused areas related to DRR and resilience building in urban, remote, rural, and Indigenous communities, targeted hazard risk management, addressing vulnerabilities resulting from gender/social inequality, disabilities, and age, advancing trans-disciplinary research and analytical tools, and climate change adaptation.
We are also interested in your problems and solutions. We can workshop challenges in a unique setting that pulls from diverse perspectives, test solutions and learn about what's working, what isn't and everything in between.

The symposium invites a well-rounded perspective, which comes from bringing together new and emerging professionals from all stakeholder groups in DRR. Only together can the goals of creating a more disaster-resilient Canada be achieved. Join us, won't you?

By Ramona McVicker

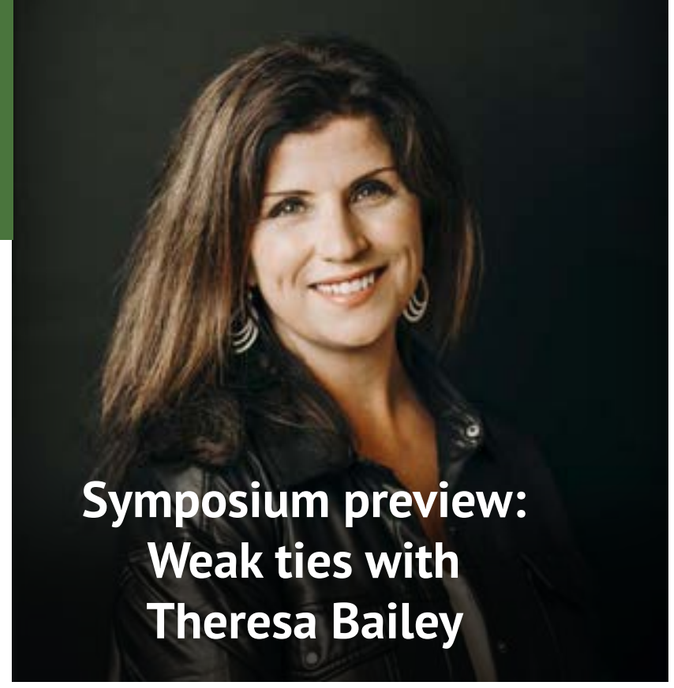
Social and professional connections offer unique resources and information that benefit disaster risk reduction. They can play a critical role in knowledge sharing to a more diverse population.

These connections can also facilitate community resilience: they can be leveraged to mobilize resources and support for those who are affected by, or respond to disasters. As well as building bridges between different groups, they can help to promote social cohesion and reduce the risk of conflict during disasters while increasing access to critical resources that can be of great assistance on a moment's notice.

For these reasons and more we are so pleased to have Theresa Bailey as one of our facilitators at the Symposium in October. Theresa has explored what makes people thrive for over two decades, and knows the answer – connection. Whether fostering community across settings defined by work or geography, Theresa teaches organizations how to authentically connect, leading to improved quality of life, productivity, and a sense of meaning and purpose.

In this session, we are going to explore how weak ties are so important to our field. It's safe to say that many of us have benefited from connections through our work that can be a resource in any so many environments. Think about people you've only met once or twice, but trust as a resource, sounding board and more. The Symposium is a great place to build and reconnect with people you can count on when needed. Join us as we not only build on existing connections, but also create new synergies that we will be grateful for down the road.

As a glimpse into what we this discussion will hold, we are sharing a few words from Theresa, on why connection matters.



Symposium preview: Weak ties with Theresa Bailey

Connection matters

By Theresa Bailey

We are wired to connect.

It's a simple statement, but after years of pandemic social isolation, restrictions, and a new world-order of hybrid workplaces, we are still readjusting. This new world has left us with some improvements in how we do business, but also, reports of residual stress and anxiety after spending so much time unnaturally alone. Through it all, what's been confirmed is that in times of crisis and turmoil, the importance of community and connection cannot be overstated. Community provides a sense of belonging, support, and stability, while connection to others enhances our overall well-being and sense of purpose, decreasing anxiety. At the same time, our community and connections help us find the resources and answers that will get us out of crisis and turmoil. It's been that way since the beginning of time, and when connection is taken away, there are dire consequences.

Why it matters

It was such dire consequences that led to the formation of the entire field of Community Psychology. Emerging in the 1960s, a crisis arose out of the rapid release of long-term in-patients from psychiatric hospitals into the community as these large and inhumane institutions were closed one-by-one. There wasn't a lot of discharge planning back then, or services to support anyone, and often patients knew no one in the areas they were released. It was quickly discovered that a key to quality of life and re-integration of former inpatients depended on their connection, and engagement with others. Without those connections, chaos often ensued.

To understand the importance and impact of connection and community we can consider our experience of social bonds. One well known study conducted by UCLA neuroscientist Matthew Lieberman set up research participants to feel socially excluded. Researchers realized social exclusion showed brain activity consistent with someone experiencing physical pain. Disconnection hurts. Social connections are as important for our physical health as our emotional well-being.

The benefits of social bonds are not limited to our most intimate relationships. By the 1970s sociologist Mark Granovetter had developed the weak ties theory exploring the importance of weak ties, or those relationships between individuals characterized by low intensity or frequency of interaction. Granovetter argued connections with people who are not in our immediate social circle, or weak ties, can be just as important as strong ties. And these are the relationships we especially turn to in times of change, upheaval, and crisis.

Why it matters for you

Consider how often and how many ways weak ties have impacted your own life. Often, weak ties provide access to information and resources that are not available through our closest connections. Perhaps there was a time when you were changing careers or moving to a different city. A weak tie with someone who worked in a different industry might have had knowledge or access to job opportunities in a new industry and made an introduction for you. Or a weak tie acquaintance in your new town might have come through with an insider tip about the best real estate agent or area to live.

Or most readers will have lived through some form of disaster. The first I remember was the ice storm of 1998. In that instance, weak ties were imperative in rural areas and the very thing that kept people, and livestock, alive. Those who were able to get out of their homes cleared trees and roads and were personally responsible for the survival of others who were cut off, housebound, or without water, or dealing with livestock who were freezing and starving. Neighbours with no former strong tie relationships rotated generators to keep pipes from freezing and delivered water. They did it for seniors, they did it for farmers, they did it for people they didn't even know. This wasn't just for days, it turned into weeks. Weak ties were the lifeline to those who needed help in times when they needed it.

Weak ties also provide access to new information and ideas, and in some cases can even impact social mobility. It's fascinating to see this play out through social media platforms. Over the past few years, we craved connection, and we witnessed social platforms make it easier to connect with people outside of our immediate social circles. These weak-tie connections are having a massive impact, generating opportunity and connection.

The key to the future?

In the future, both formal and informal connections, strong and weak ties, will be important for preparing us for whatever is coming next. Many of us, though, have gotten comfortable with the routine of being alone, or on our own. It's not necessarily what's best for us, emotionally, and it certainly won't be the thing that saves us moving into whatever change comes next.

So, we need to find ways to spark the connection we may still be missing and reconnect in new ways. This is not just networking, it's more than that. Consider Malcolm Gladwell's book "The Tipping Point," where he outlines three types of people that are imperative to ideas catching on and changing in the world. The Salesman, persuasive and charismatic, the Maven, who possesses extraordinary information and expertise, and, the Connector. The connectors know everyone, have a large social circle, and use it to help others.

The Connector doesn't just network. This is networking with good will.

When it comes to well-being, satisfaction, and sometimes survival, the importance of weak ties cannot be overstated. Weak ties in our various communities provide a sense of belonging, support, and connection to others that can enhance our overall well-being. While strong ties are important for emotional support, weak ties provide access to new information and ideas that can lead to new opportunities and connections, and our survival. In an increasingly unpredictable world both strong and weak connections will be important for helping all of us thrive.

Understanding disaster risk in Canada: An introduction

By HazNet's editorial team

Caption: Disaster risk is the dynamic intersection of hazard, exposure, and vulnerability.

Understanding risk is foundational for effective emergency management and disaster risk reduction. The Sendai Framework for Disaster Risk Reduction identified "understanding disaster risk in all its dimensions" as the first of four priority actions. Similarly, the Emergency Management Strategy for Canada outlines the commitment of the federal, provincial, and territorial governments to prioritizing and advancing disaster risk assessments: "Access to accurate risk information, through an open and inclusive dialogue, is critical to informed decision-making" (p. 13).

The past decade has seen astonishing advances in technological capabilities and scientific understanding of the hazard component of disaster risk, from robots that map the insides of volcanoes to drones that sail into the eye of hurricanes to statistical modelling techniques that leverage deep machine learning to improve our ability to predict big rare events, such as earthquakes or pandemics.

But understanding hazards is only part of the equation. We need accessible (available, easy to find, and easy to understand) and accurate (reliable data and source) risk information to inform decision-making across all sectors of society, from individuals to businesses to communities to Indigenous groups to governments. What might a future look like if, working together, we realize these goals?.

What if... disaster policies were directly informed by the people they impact?

What if... equitable access to risk information addresses the information asymmetry between people and institutions that price risk - such as insurance, lending institutions, developers, and governments - so we can all make decisions based on the same understanding of risk?

What if... funding programs were designed to target risk, and work with the most at-risk communities and neighbourhoods to accelerate adaptation and mitigation, ultimately reducing the costs and impacts of disasters for everyone?

What if... urban planning design considered disaster risks in the same way as community amenities and access to schools, services, and parks?

What if... building codes were designed to recoverability standards, so buildings could better withstand the impacts of hazards and be repaired more quickly, minimizing cost and disruption after a disaster?

What if... infrastructure was designed to be resilient not only in today's climate, but that of the future?

What if...disaster financing programs could quickly provide assistance and serve the people who need help most to reduce the unequal impacts of disasters?

What if...honouring Indigenous Science, communities are developed to work with the natural environment, leaving room for rivers to flood and forests to burn as part of natural cycles of renewal without putting people in harm's way?

Understanding disaster risk in all its dimensions can help us get there. Our **feature section** opens with an interview with Dr. Ellen Prager, marine biologist and science communicator, who describes the current state of what is known and not known about natural hazards, and the important work still remaining to improve how this knowledge is shared. We then feature snapshots of a select number of national risk assessment initiatives to showcase the advancements being made in understanding disaster risk in Canada:

The Risk Profiler tool focuses on earthquake risk and helps users explore a range of earthquake scenarios and visualize the potential impacts.

The Flood Hazard Identification and Mapping Program is accelerating the mapping of high-risk flood areas in Canada to improve land use planning and inform mitigation and adaptation strategies.

Climate Data features a range of tools to help people understand how Canada's climate is changing and what this means for different locations in Canada, with informative videos to make this data more accessible.

The Social Vulnerability Index goes beyond looking at hazards to exploring another key dimension of risk: vulnerability. This index integrates socio-demographic, financial, housing, economic, and other measures to identify places that may face greater vulnerability to disasters due to systemic factors and lack of access to resources.

This is not an exhaustive list of all initiatives underway to understand disaster risk in Canada, but highlights the important progress being made and the need to continue to invest in making risk data accessible and accurate so it can inform decision-making for all of us.

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Understanding risk: An earthquake risk assessment for Canada and RiskProfiler.ca

By Makaila Wenezenki, Phillip LeSueur, and Tiegan Hobbs

M9.0 Cascadia Full Rupture Subduction Earthquake (BC) on RiskProfiler.ca

Natural Resources Canada is leading an earthquake risk assessment for Canada and has developed a platform for sharing risk information at RiskProfiler.ca.

How does this initiative contribute to understanding risk in Canada?

RiskProfiler.ca provides information about the consequences from potential earthquake events (scenarios), and from all earthquakes that could affect Canada area over time (probabilistic earthquake risk). For each earthquake scenario, you can explore the extent and level of ground shaking; expected consequences in terms of potential death, dollars, and damage; debris volume estimations, and the potential benefit of building retrofits. For all of Canada, you can explore probabilistic earthquake risk information such as the potential risk to life, the economic risk from earthquakes, or the level of risk of an area relative to the rest of Canada. Further technical information,such as analysis methods, is available on RiskProfiler.ca.

To quantify earthquake risk in Canada, Natural Resources Canada generated a state-of-the-art exposure model covering the entire country. It uses satellite remote sensing and Census data to create an inventory of buildings and occupants, including information about the construction type and seismic design level. Natural Resources Canada also paired with the Global Earthquake Model Foundation to create fragility and vulnerability functions, which relate seismic shaking to levels of damage or financial loss. These advances, along with implementation of the latest National Seismic Hazard Model, allow for a robust calculation ofseismic risk from coast to coastto coast.

Who are the intended users?

RiskProfiler is currently developed for community planners and emergency managers to understand earthquake risk and inform evidence-based risk reduction plans. It is also likely of interest to Indigenous Nations, governments, and insurance providers. The information can help practitioners answer important questions such as: What are the consequences of an earthquake? What areas and individuals are at highest risk from an earthquake? Are the earthquake risks tolerable to our community? How should we plan to respond in the event of an earthquake? We intend to make RiskProfiler useful to the general public in the future.

In practice: Exploring a M9.0 Cascadia Full Rupture Subduction Earthquake Scenario in BC

In the M9.0 Cascadia scenario (Hobbs, Journeay, & Rotheram, 2021),RiskProfiler illustrates the potential effects of a magnitude 9.0 event along the Cascadia interface fault, the fault defining the boundary between the North American and Pacific Ocean tectonic plates. This event is often referred to as 'The Big One' and it will affect most communities in southwestern British Columbia.

RiskProfiler first provides a general overview of this scenario, sharing details such as estimated damage to 18,000 buildings and costing $38 billion CAD in dollars. RiskProfiler then presents additional indicators to further examine this scenario.

For example, the M9.0 Cascadia scenario suggests 33,000 tonnes of disaster debris will be created in 'Greater Vancouver A' division, near Iron Bay (pictured). Of this, 16,000 tonnes is estimated to result from buildings in the commercial occupancy class. RiskProfiler.ca can be used to examine these - and other - metrics across geographies of interest.

For more information, contact

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Phillip LeSueur is a research scientist at Natural Resources Canada.

Tiegan Hobbs is a research scientist at Natural Resources Canada.

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Understanding risk: Advancing flood hazard mapping and information in Canada

By Natural Resources Canada, Canada Centre for Mapping and Earth Observation, Ottawa, ON

The magnitude and frequency of floods have increased considerably in recent years as have associated recovery costs. Up-to-date flood maps are essential tools that inform decision-makers by identifying areas at high-risk of flooding, improving land use planning, and informing adaptation and mitigation measures. Canada requires current flood maps to protect lives and properties against its costliest natural disaster.

In 2021 the federal government invested $63.8M in the **Flood Hazard Identification and Mapping Program (FHIMP)** to complete flood maps of higher-risk areas in Canada and make them available to the public. In partnership with provincial and territorial (PT) governments, this program is led by Natural Resources Canada (NRCan) with support from Public Safety Canada and Environment and Climate Change Canada. These efforts are aligned with the Emergency Management Strategy for Canada to better prevent, mitigate, predict, prepare for, respond to, and recover from emergencies and disasters.

The Honourable Jonathan Wilkinson, Minister of Natural Resources, recently highlighted funding programs that form part of the Action Plan under Canada's National Adaptation Strategy, which includes expanding the FHIMP to advance nation-wide flood hazard coverage. NRCan will provide detailed information once the program expansion launches.

Instituting Agreements with all Provinces and Territories

PT governments are eligible recipients for cost-sharing under the FHIMP. They may collaborate with and redistribute funding to eligible entities such as municipal or other local governments, public sector bodies, private sector bodies, Indigenous communities, or international non-governmental organizations.

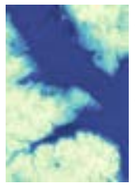
To date, 22 agreements are in progress with PTs. Over 200 flood hazard mapping projects—grouped by data acquisition, flood hazard map production, and information dissemination—are currently being implemented in communities across the country.

Number of FHIMP projects (under development & confirmed) per province/territory

Flood Information Dissemination

Accessible information and guidelines help communities understand and manage flood hazards. NRCan's Canada Centre for Mapping and Earth Observation (CCMEO) is compiling and disseminating flood hazard data and researching innovative ways to advance flood mapping practices relating to geomatics. Here is a sample of related and recent activities:

Historical Flood Events: This data layer holds over 1400 historical flood events in over 7000 locations. This can be a starting point for understanding regional flood trends or for training machine learning models to predict nation-wide flood risk.



Flood Susceptibility Index: This index applies machine learning techniques to create a national map of areas susceptible (or prone) to flooding. This is based on terrain, hydrography, geology, ecology, and meteorological characteristics.

National Flood Hazard Data Layer: This index of currently available flood hazard information across Canada will be released by 2024. Flood hazard outputs resulting from FHIMP will be included in its index.

Federal Flood Mapping Guidelines Series: This series of evergreen documents addresses different steps involved in creating a flood map and helps by providing standard information to advance flood mapping activities across Canada.

Want to Learn More?

To learn more about flood mapping, visit the NRCan Flood Mapping Website.

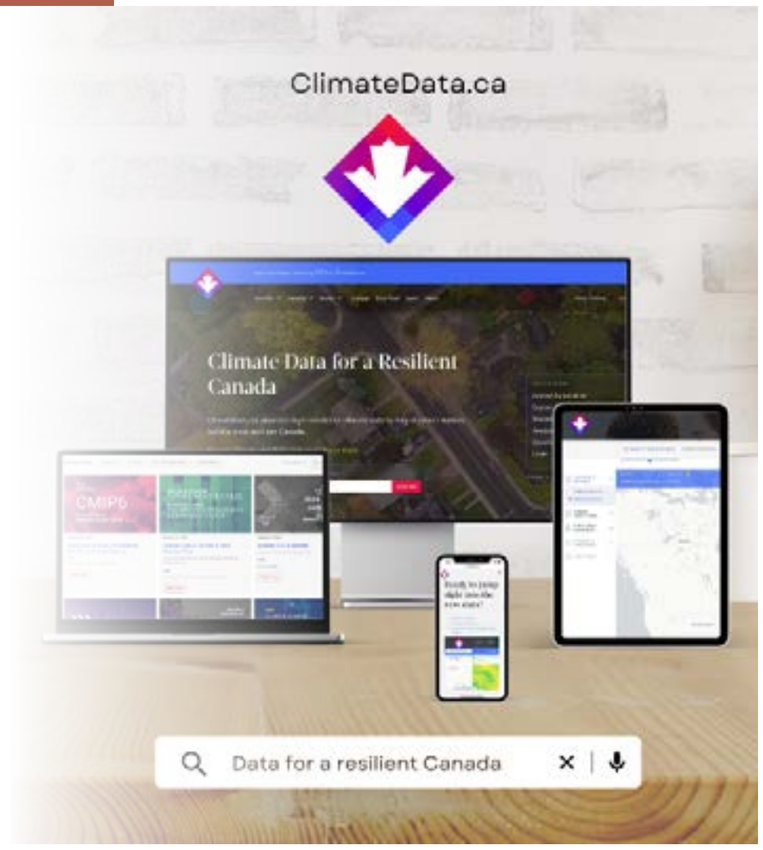
For more open geospatial data, visit Open Maps.

If you have any questions about the FHIMP, don't hesitate to email geoinfo@nrcan-rncan.gc.ca.

Understanding risk: ClimateData.ca

By Teah Lizee and Ryan Smith

Canada's climate is warming at an alarming rate, twice as fast as the global average and even faster in the North. The consequences of this warming trend are already evident across the country in the form of thawing permafrost, rising sea levels, heat waves, droughts, floods, and other extreme weather events. Climate change is increasing risks because it increases the frequency and intensity of these types of events. These impacts present significant risks to Canadians, the environment, and the economy. To mitigate these risks, it is therefore essential to first understand the scale of future climate change.



How does this initiative contribute to understanding risk in Canada?

This is where ClimateData.ca comes in. It provides decision-makers with a comprehensive understanding of how a changing global climate will manifest itself here in Canada. The website features an array of innovative tools and features that enable users to access, analyze and customize climate data in ways that were not possible before. For example, the Analysis page allows users to set specific thresholds like the number of days exceeding a certain temperature, while the Download page makes it easy to find and download complete climate datasets for locations across Canada.

Getting into the specifics of the data on ClimateData.ca, this site includes the new standard of emission scenarios called Shared Socio-economic Pathways (SSPs), which can help practitioners consider how much future climate risk they could encounter in the coming decades. These new SSPs describe possible socio-economic conditions like population and education, energy use, land-use changes, technology, climate change mitigation actions, and other human-caused climate drivers that influence greenhouse gas (GHG) emissions.

Importantly, ClimateData.ca isn't just a data platform. It also offers a Learning Zone where Canadians can find short user-friendly articles, videos and more about the science behind climate data, and access tailored resources and products designed for learners of all levels. For example, we have a great article on understanding the SSPs. The Sector pages offer unique case studies and resources that cater to the needs of various sectors of the Canadian economy, including Agriculture, Transportation, Buildings, and Health. Furthermore, ClimateData.ca plays a crucial role in fostering collaboration among Canada's leading climate scientists, policy analysts, and thinkers. This partnership has brought together various organizations like the Pacific Climate Impacts Consortium, Ouranos, ClimateWest, CLIMAtlantic, the Prairie Climate Centre, the Computer Research Institute of Montreal, Habitat7, and the Canadian Centre for Climate Services to develop a comprehensive, accessible platform that helps Canadians better understand how the climate is changing in Canada.

Who are the intended users?

ClimateData.ca is intended for use by any professional who can use climate data to either plan for, implement, or make the case for adaptation measures in their region or sector. It is therefore designed to cater to a broad range of audiences, from the general public to academics, policymakers, and professionals working in various sectors, both public and private. For instance, researchers and academics can use ClimateData.ca to study climate trends, identify emerging risks, and develop innovative solutions to mitigate these risks. Policymakers and government officials can use the website to inform risk assessments and make informed decisions about climate policy and climate change adaptation planning. Other professionals in various industries, such as engineers and urban planners, can use ClimateData.ca to develop climate-resilient infrastructure and ensure the safety and resilience of communities.

Teah Lizee is a Physical Scientist at the Canadian Centre for Climate Services, Environment and Climate Change Canada.

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Understanding risk: A social vulnerability index for Canada

By Liton Chakraborty, Robin Bourke, and Matthew Godsoe

Public Safety Canada is in the process of developing a national social vulnerability index for equity-informed emergency preparedness and disaster risk reduction programs.

Contribution to understanding risk in Canada

Programs and initiatives for disaster and emergency management cannot be reactionary in the context of a changing climate that is causing more frequent and severe weather events. Over the past few decades, collecting and using data on physical exposure to natural hazards and social vulnerability characteristics has been a primary focus for all levels of government and stakeholders to support building community-based resilience programs to climate change, and to prioritize risk management strategies, targeted disaster mitigation investments, and risk communication.

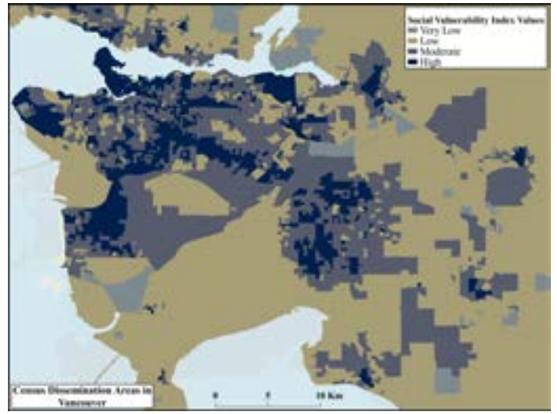
As the frequency and severity of hazards and disasters continue to increase, the disproportionate risk exposure of individuals, groups, and communities, who are most vulnerable, is likely to also increase. Several vulnerability factors, including poverty, lack of equity and disproportionate risk exposure of communities and marginalized groups due to lack of access to emergency healthcare services and facilities, shelters, transportation, remoteness, and crowded housing, may hinder an individual's and community's ability to prevent financial loss, injury, and fatalities in a disaster. To better understand community-wide vulnerability and risk indicators across Canada, the Resilience and Economic Integration Division (REID) of Public Safety Canada has created a data and analytical repository for social vulnerability and gender-based analysis plus (GBA+) factors by developing neighbourhood deprivation and social vulnerability indices at the national scale.

The social vulnerability index (SoVI) uses national census data to evaluate spatial patterns of vulnerability based on socio-demographic, ethno-cultural, residential and economic indicators that represent neighbourhood-level racial/ethnic background, financial resources, special needs population, housing, family structure, built environment characteristics, and other dimensions of social deprivation.

The SoVI presents data on the factors that expose socially vulnerable populations in high-hazard areas and helps identify population subgroups and communities that are likely to bear the most significant social burden of risk, and most likely need support before, during, and after a hazardous or disastrous event. The SoVI and GBA+ initiative of REID supports the Sendai Framework for Disaster Risk Reduction 2015-2030 by providing data and technical analysis for a better understanding of disaster risk in Canada by integrating social vulnerability with physical exposure to natural hazards, promoting investments in disaster risk reduction for resilience, and enhancing proactive disaster preparedness for effective response and recovery before, during, and after a disaster. Following theoretically relevant and literature-consistent methods from the Hazards of Place model (Cutter, 1996; Cutter et al., 2003) and the contemporary SoVI model (Chakraborty et al., 2020, 2021, 2022), the SoVI was constructed to present a dataset and spatial layers for mapping vulnerability at several geographic scales (e.g., census metropolitan area; census tract, census subdivision, and dissemination area) with products planned for release at a future date.

Intended Use

The SoVI, as a data-driven decision support tool, aims to support federal policy development initiatives in disaster risk reduction, emergency preparedness, and risk management from an all-hazards perspective. Primary users include federal policy advisors and emergency managers who need to know the geographic concentration and distribution of social vulnerability to hazards and disasters. This will enable identification of identity factors, equity-seeking population subgroups, vulnerable neighbourhoods, remote areas, critical assets, residential properties that are likely to be adversely affected by hazards and disasters. The SoVI database will help emergency managers to develop proactive emergency management plans and support build-back better to foster social resilience. The SoVI tool will support emergency planners working at provincial and municipal levels to know populations and residential characteristics located in areas with high vulnerability that are most likely to be adversely impacted by future disaster events. As a data-driven knowledge-base, the SoVI will help build social capital and establish operational and local capacities needed to manage both immediate response and post-disaster recovery efforts.



Caption: Example of social vulnerability index for Vancouver

Dr. Liton Chakraborty is a senior policy analyst in the Resilience and Economic Integration Division of Public Safety Canada. His research focuses on assessing social vulnerability, environmental and social inequities, inclusive resilience, and racial/ethnic disparities in exposure to climate change risks. Dr. Chakraborty's research helps identify data-driven Gender-based Analysis Plus (GBA+) and systemic inequity factors in policy decisions that support evidence-based policy development emphasizing an equity-centered approach.

Dr. Matthew Godsoe is the Director of the Resilience and Economics Integration Division at Public Safety Canada. He has held a number of scientific, policy, and executive positions within Public Safety Canada and Defence Research and Development Canada. His research interests are focused on scalable policy interventions that increase whole-of-society disaster resilience. Dr. Godsoe is former technical rescue instructor, Search and Rescue volunteer and wilderness guide who spends as much time with his family outdoors as possible.

Robin Bourke P.Eng., is an Engineering Advisor for the Resilience and Economic Integration Division at Public Safety Canada.

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What we know and wish we knew about volcanoes, hurricanes, earthquakes, and more: Interview with Dr. Ellen Prager.

By Carly Benson

In 2015, the Sendai Framework for Disaster Risk Reduction established an ambitious outcome for the global community to accomplish by 2030:

The substantial reduction of disaster risk and losses in lives, livelihoods and health and inthe economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries (Sendai Framework).

One of the priorities for action is to understand disaster risk. The Sendai Framework urges governments to invest in understanding risk across all its dimensions - hazard, exposure, vulnerability, capacity, and the environment - and to use this understanding to inform disaster prevention and mitigation, planning and preparedness, and to enable actors across all of society to make risk-informed decisions by ensuring non-sensitive data is freely available.

I sat down with Dr. Ellen Prager, a marine scientist, researcher, science communicator, and author of Dangerous Earth: What We Wish We Knew about Volcanoes, Hurricanes, Climate Change, Earthquakes, and More to talk about our current scientific understanding of disaster risk.

Knowns and unknowns of natural hazards

CB: *In general terms, what do we know and not know about major hazards such as floods, fires, earthquakes, and hurricanes?*

EP: I spoke with numerous scientists while researching this book, from glaciologists to volcanologists to seismologists and beyond, and there were a few common threads across hazards. First off, much of the information we have is through indirect research. You can't see first-hand inside tectonic faults, inside the "plumbing" of a volcano, or under a glacier. Technology is improving and we are just getting to the point of being able to peek underneath an ice shelf or glacier, but in general, we have to use indirect evidence to understand these hazards. Sometimes, this means relying on geological records because no one was around the last time glaciers melted or a supervolcano erupted.

That said, scientists increasingly understand the mechanisms behind these hazards and the risks they create for people and communities. We have a pretty good idea of how a hazard such as an earthquake or volcanic eruption or hurricane happens, and we know where they are most likely to happen. Hazard mapping has come a long way in this regard.

But the big missing piece is exactly when. When will a hazard strike? How fast will it happen, how bad will it be? That's what we're not so good at yet. For seismologists, the quest to be able to forecast or issue an early warning for earthquakes is sometimes called the "holy grail", but this is true across most hazards: volcanoes, tsunamis, floods, fires, heatwaves, sea level rise, etc.

The question of "when" was especially striking as I spoke to climate change scientists. Across the board, they said the impacts of climate change are happening faster than they expected, even knowing their models and estimates are generally conservative. To me, this was the most alarming part of these discussions. Wildfires, heatwaves, storms with huge amounts of precipitation, ocean warming, ice sheets melting - the extreme impacts of climate change are happening much faster than anticipated.

Image credit: iStock.com/robert mcgillivray

CB: *To what extent is climate change affecting our understanding of other hazards, such as floods, storm surges, wildfires, etc.? Have risk assessments based on historical data become obsolete?*

EP: We have to start with historical data to see where the risks are the greatest, and as a starting point to understand how hazards behave. That said, the risks we face are unprecedented and the pace of change is so fast, we have to realize the impacts we're going to see will be more extreme.

Taking action

CB: *Does the focus on continuously improving our understanding of risk distract from taking action? Do we know enough yet to act?*

EP: Yes! In most cases, there's plenty of science and we know enough to plan, to prepare our homes and communities, and to respond. But science is an evolving process, so we need to take an adaptive approach: as we learn more, we shift how we prepare.

For a long time, scientists spent their effort on research, trying to understand hazards and risks. But in writing this book, I saw a shift in which scientists are stepping out of an objective role and saying, "we know enough to prepare and act."

As scientists - and policymakers too - we don't necessarily understand how best to get people to take action. We struggle to get people the information they need in the medium most appropriate for them: Not everyone is online, or speaks English, or watches the Weather Channel. This is where physical scientists need to work with social scientists, behavioural economists, and other professionals in communications and emergency management. How do we get the right information to people in the right way so they can and do take action?
Communication connects the scientific understanding of risks and risk assessments with hazard warnings and forecasts. Too often, it's the missing link. Because just producing data is not enough - there are so many platforms and databases and portals and websites with data. But interpreting that data, helping people to access the information they need when they need it in a way that makes sense and enables them to act, that's where we have to improve.

Caption: Nevado del Ruiz volcano in Colombia. Image credit: iStock.com/Nicolas Socadagui

Risk communication: The missing link

CB: *In Dangerous Earth, you share a story of the eruption of the Nevado del Ruiz volcano in Colombia in 1985. As the volcano became more active, scientists wanted to warn the public of the increased risk but officials downplayed it, partially out of concern for "real estate devaluation". Tragically, two months later a major eruption killed more than 23,000 people.*
I was struck by how similar this is to current debates in Canada about disclosing flood risk to the public, for fear it could impact real estate prices. What would you counsel governments weighing the potential economic impact of disclosing risk against the threat to people and communities?

EP: This problem is not unique to Canada. California is facing cliffside erosion, storms, and rising sea levels. Florida has storm surges and hurricanes. Wildfires, floods - governments around the world are grappling with these questions. But we can't let fear - or politics - compromise our ability to plan and prepare for disasters.

We have to talk about what we know and what possible solutions are. I recently saw a survey for communities in Florida, where I live, about coastal retreat. In the survey, 40% of people said they would be willing to move if the sea level rise and storm surge were going to get worse in the next few years. We can't underestimate the ability of people - once they understand the risks to themselves, to their families and homes, to the things they care about - to be rational and want to take action.

I recently also attended a workshop on coastal retreat, and the number one thing community members said to the government officials leading the workshop was that it has to be two-way communication. If it's managed retreat (as in, managed by the government), then people aren't interested. But they are willing to talk about assisted retreat, where governments help and communities work together. And this, I think, is key. We have to get communities involved early on, and we need to talk about solutions.

Caption: Coastal flooding and erosion in the United Kingdom. Governments around the world are grappling with the challenge of how to talk about disaster risk. Image credit iStock.com/Moorefam

CB: If you could change one thing about how we are advancing the Sendai priority of understanding disaster risk, what would it be?

EP: We need to get better at communication. There are thousands of portals of data, but people don't know what the data mean. They don't know where to look for the right data for different hazards. We need a platform that allows experts to collaborate with decision-makers and community members in real time to help them interpret the data, to understand what it means for them, and to take action.

Dave Jones of StormCenter Communications has created a platform called GeoCollaborate designed to do exactly that, to bring data together with expert interpretation, easy access and foster collaboration, but we need the numerous federal agencies involved in different aspects of hazard and risk science to invest and make it happen.

Let's not underestimate people's ability to act once they understand the potential impacts to them and their families.

Carly Benson is an emergency management professional who has worked for municipalities in Alberta and British Columbia during large-scale response and recovery operations. She also studies disaster recovery as an academic and is passionate about how to improve recovery processes and outcomes for communities.

Dr. Ellen Prager is a marine scientist and author who is passionate about oceans, the environment, and helping people understand science. She has written numerous books, including Dangerous Earth: What We Wish We Knew about Volcanoes, Hurricanes, Climate Change, Earthquakes, and More. Her current project uses the wacky questions she and other scientists often get as a lighthearted way to address misinformation about oceans and climate change. For example: Should you pee on a jellyfish sting? You'll have to wait for the book to find out (just kidding - don't do it! You could make it worse, and there's some fascinating chemistry as to why).

Indigenous Peoples and the Sendai Framework for Disaster Risk Reduction 2015-2030

By Simon Lambert and John Scott

Recently, the authors were invited to take part in the review of diverse knowledge systems for DRR, one of several thematic studies included in the Sendai Framework Midterm Review (SF MTR). The review will inform the 2023 General Assembly meeting in New York and several other conferences this year..

It is fair to say we are nonplussed with the progress of the United Nations Office for Disaster Risk Reduction supporting Indigenous Knowledge (IK).

Yes, it is true that IKs (the plural matters as these knowledges are diverse and specific to location and community) are explicitly noted in two sections of Sendai: to "complement" existing disaster science and policies (section 24, i), and "contribute" to the development and implementation of plans and mechanisms (36, a, v). In addition, Indigenous speakers and sessions are now a regular feature of United Nations and other conference proceedings, but it is difficult to ignore the condescension. Having organized and participated in multiple Indigenous sessions for Global and Regional platforms, we have seen first-hand the value of holding space for Indigenous voices to narrate the experiences of their communities.

And yet, are Indigenous communities any safer for their nominal inclusion in these processes? Has the (hard fought) acceptance of IKs in multilateral agreements like the Sendai Framework, the Convention on Biological Diversity, and the 2030 Agenda for Sustainable Development led to stronger, more inclusive, and more effective DRR strategies? Can our precious knowledge – threatened and undermined for 500 years – somehow "complement" science and "contribute" to DRR plans and mechanisms as Sendai intends?

Understanding Indigenous disaster risks

Indigenous Peoples have found themselves more vulnerable to environmental hazards and recurring disasters due to the violence and dispossession of colonization. Essentially, our communities are undermined through ongoing political and economic marginalization, the routine dismissal of our cultural values and practices, the ongoing loss and degradation of lands and resources, and the threat of violence, abuse, and murder by state and private forces (United Nations, 2021). These 'displacements' undermine our resilience to disasters, which historically was maintained by comprehensive environmental knowledge, socio-cultural connections, empowered mobilities, and sovereignty.

Indigenous representatives expend considerable effort in multiple fora trying to communicate to non-Indigenous people the unique perspectives that Indigenous Knowledges bring to disaster studies, among other areas. Yet given the limited and constrained participation of Indigenous voices in DRR, what are the pathways that might lead to a safer world for Indigenous communities?

Investing in disaster risk reduction for Indigenous resilience

Disaster risk reduction must be seen as a public health concern, and the COVID-19 pandemic has reinforced the need to pay attention to social determinants of health. Poor quality and overcrowded housing, limited health services, poverty and racism have undermined Indigenous health for generations. A constant refrain from Indigenous leaders has been for the necessary resources to determine their own development. Despite the 2007 United Nations Declaration on the Rights of Indigenous Peoples, investment in health has been inadequate, if it is available at all. Communities struggle to find the time and support to reduce their growing risks to disasters and often lack sufficient investment into basic infrastructure and especially housing, emergency services and trained personnel.

In many regions, global heating is threatening many ecosystems and increasing floods and rising sea-levels threaten the lands on which many communities reside. This continues the pattern of forced displacement for Indigenous Peoples with "adaptation" to climate change too often defaulting to their relocation, and ironically often on to other Indigenous territories (Indigenous climate migrants forced to re-settle in new, climate-induced reservations). Although many Indigenous leaders are aware of the need to invest in DRR, they remain trapped in the demands of constantly responding to ongoing urgent events while still recovering from previous disasters. The cliché of resilience in this space signals the endurance and bare survival of many Indigenous communities.

Enhancing Indigenous disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation, and reconstruction.

While climate change is a planetary concern, assumptions we are all in the same boat ignores the empirical evidence that the effects are not borne equally. One clear example is that disasters fall disproportionately on Indigenous communities, who are then more adversely impacted, and for longer, leaving them more vulnerable to future disasters. However, experience suggests that when the sovereignty of Indigenous Peoples is acknowledged (albeit in a fragmented and inadequate manner), Indigenous communities can better reduce their risks, ready themselves for whatever the event, respond more effectively, and recover quicker than possible without agency (Lambert, 2022). We agree with Guterres (2021b) when he called for a renewal of the "social contract" to build hope, trust and social cohesion, and would add that Indigenous Peoples need to be at the forefront of this debate.

Conclusion

Colonization continues to manifest through ongoing 'disaster risk creation' for Indigenous communities who have been deprived of the means to maintain and improve their resilience to environmental and other hazards. While the Sendai Framework notes the potential for Indigenous Knowledges to 'complement and contribute' to DRR plans, the Mid Term Review finds minimal progress to concrete application at the local scale. A key obstacle remains the colonial structures which the relationship between states and Indigenous communities. Indigenous-led sessions need to be a constant feature in Global and Regional Platforms, with Indigenous voices across all topic areas, and at the highest levels of decision-making. Without these initial and basic steps, Indigenous empowerment will continue to haunt the full and proper implementation of the Sendai framework.

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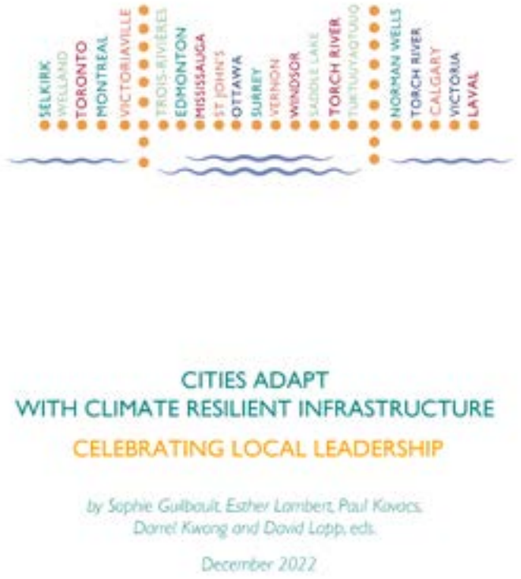
Planning for climate resilient infrastructure

By Sophie Guilbault



According to the Federation of Canadian Municipalities (FCM), approximately 60% of public infrastructure in Canada is built and maintained by municipalities (FCM, 2023). Many of Canada's infrastructure assets are aging and were designed to construction codes and standards based on historical climate data as opposed to future climate scenarios. Each year, municipal buildings, transportation systems, water supply and wastewater treatment systems, and many other types of public infrastructure are affected by severe weather events in communities across the country. The repeated impacts faced by Canadians have led many communities to rethink the way they design and manage municipal infrastructure to ensure their long-term durability and performance under current and future climate conditions.

The Institute for Catastrophic Loss Reduction recently published a report entitled "*Cities Adapt with Climate Resilient Infrastructure: Celebrating Local Leadership*", which showcases successful adaptation initiatives in public infrastructure from both small and large communities across provinces and territories. These examples demonstrate how communities used various methods and strategies to understand their specific climate risk and infrastructure vulnerability to either rehabilitate or build new public infrastructure.

Understanding climate risk to infrastructure

The approaches promoted by communities in the latest Cities Adapt report emphasize the importance of managing public infrastructure with a focus on performance over the lifetime of the asset and based on future climate projections. When evaluating the risk to infrastructure and the broader system it operates in, various elements need to be considered, such as exposure, vulnerability, capacity, maintenance needs, etc. Vulnerability assessments are instrumental to support lasting design and rehabilitation needs and can assist municipalities in their long-term asset management planning effort, allowing communities to inform decision-makers on priority investments.

Canadian municipalities showcased in the report used various strategies to further their understanding of public infrastructure vulnerability. While some relied on staff of consultant analysis, others used strategies such as the Public Infrastructure Engineering Vulnerability Committee (PIEVC) protocol. The PIEVC protocol was developed by Engineers Canada with financial support from Natural Resources Canada to conduct an engineering assessment of the vulnerability of Canada's public infrastructure to the impacts of climate change. It is available at no charge for any Canadian public infrastructure. The PIEVC approach uses both historical and future climate conditions, establishes the adaptive capacity of a wide range of infrastructure assets, and promotes cross-sectoral collaborations through a series of workshops to evaluate the infrastructure design, operation and maintenance in an effort to identify which components are at higher risk of specific climate threats. In one example, the City of Ottawa used the PIEVC protocol and other risk analysis methods to gain a deeper understanding of the risks faced by its Graham Creek stormwater infrastructure. While the initial assessment was for a single project, the approach was successful in identifying recommendations to improve resiliency and the City decided to scale up the approach for all future risk mitigation initiatives. The City of Ottawa's approach enables municipal staff to update information around climate risks and infrastructure components, ensuring that asset management strategies evolve as new information becomes available.

The PIEVC protocol was developed by Engineers Canada with financial support from Natural Resources Canada to conduct an engineering assessment of the vulnerability of Canada's public infrastructure to the impacts of climate change. It is available at no charge for any Canadian public infrastructure.

Securing funding

Many communities highlighted the importance of understanding risk to secure financial investments in public infrastructure. As early adopters of the PIEVC protocol in 2011, the City of Laval collected important data to analyze the vulnerabilities of a major overflow structure. Unfortunately, the City did not have an overall master plan for its water department at the time, and was unable to fund the rehabilitation initiatives recommended in the analysis. Fast forward several years, Laval submitted its PIEVC report outlining the risks and vulnerabilities of the Belgrand overflow structure as part of its application to a newly-established funding program for climate adaptation and was successful in securing the necessary funds. In this case, the vulnerability risk assessment gave the municipality important insight and a clear path forward when funding became available to implement risk reduction actions.

In the Northwest Territories, the Town of Norman Wells faced increasing erosion on the riverbank, threatening the stability of local roads and other infrastructure. Concerned with this worsening situation, the Town requested funding through the Climate Change in the North Program of Crown Indigenous Relations and Northern Affairs Canada to conduct a geotechnical investigation of the riverbank. The final report led to the development and implementation of a comprehensive drainage plan to reduce erosion and flooding risk.

A comprehensive strategy for success

When it comes to planning, building and rehabilitating climate resilient infrastructure, it is instrumental to clearly understand local risks and vulnerabilities. However, other considerations are equally important to ensure long-term success. The Cities Adapt report found that many successful communities had established strong asset management plans that detailed the necessary maintenance and prioritized future asset investments over time. Additionally, many communities benefitted from cross-sectoral collaborations either to better understand their infrastructure risk, or to secure funding for infrastructure investments. Finally, the report highlighted the necessity of increasing local capacity to perform climate-resilient planning and maintenance in an effort to ensure long-term performance of public infrastructure. This implies investments in financial, human and political resources.

The report published by ICLR demonstrated the leadership of 20 communities who have creatively found ways to increase the resilience of their infrastructure assets. While more widespread actions are needed across the country to tackle the infrastructure crisis, many Canadian communities are taking the lead in adapting Canada's infrastructure to a changing climate.

Sophie Guilbault is the Director of Partnerships at the Institute for Catastrophic Loss Reduction, a multi-disciplinary disaster prevention research institute affiliated with Western University. Since joining ICLR, she has designed, implemented, and lead several research and partnership programs to strengthen the research agenda of the Institute, including ICLR's Cities Adapt, Resilience in Recovery Program and Quick Response Research programs. Sophie holds degrees in architecture (B.Arch & M.Arch) from Laval University as well as a graduate degree (M.Sc.) in disaster and emergency management from Tulane University.

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Emergency Management's last resort: The 2022 invocation of Canada's Emergencies Act

By Jack L. Rozdilsky and Maharshi Jani

The Emergencies Act is the Canadian federal government's last resort. The general concept is if all existing measures to manage an emergency fail, there exists a rarely-used federal Act to authorize the taking of special temporary measures to ensure safety and security during national emergencies. Taking special temporary measures means the federal government will assume extraordinary powers which are not appropriate for use during normal times.

In early 2022, a trucker-based protest against COVID-19 vaccine mandates expanded in scope into a disruptive protest movement known as the so-called Freedom Convoy (Alden, 2022). The tumultuous period of lawlessness, blockades, and occupations led to the first-ever invocation of the Emergencies Act.

This article provides background on the Act, discusses its precursor the War Measures Act, comments on how the Act was used, and concludes with wider implications for the emergency management community to consider. The Emergencies Act is no longer an untested Act — it is a tool that was used to manage an emergency and now has an implementation track record.

Image: Police protecting the West Block of Ottawa's Parliamentary Precinct during Canada Day Freedom Convoy protests on July 1, 2022. In February 2022, the Emergencies Act declared the Parliamentary Precinct as a protected place. © Jack L. Rozdilsky, reproduced with permission.

The Emergencies Act

The Emergencies Act (Government of Canada, 1988) was assented to and came into force in 1988, succeeding the War Measures Act. It sat idle on the books for 34 years until its first use in 2022. The February 14, 2022, invocation of the Act followed a very specific protocol specified in subsection 25(1) of the Emergencies Act, with a proclamation declaring a Public Order Emergency (Government of Canada, 2022b). The specific emergency measures regulations allowing for the federal government to exert extraordinary powers were then specified in a Statutory Orders and Regulations statement, SOR 2022/22 (Government of Canada, 2022a).

Any time the federal government assumes extraordinary powers, there is a real risk to undermining democratic principles. However, a key point is that the Act's implementation in 2022 was not a power grab action moving toward dictatorship as claimed by conservative lawmakers (Quay, 2022). It was a fully legal procedure to deal with an emergency implemented under a very strict and specific enabling process enshrined in Canadian law.

One year later, on February 17, 2023, the mandated inquiry completed by the Public Order Emergency Commission released its findings and concluded that reasonable grounds existed for the federal government's invocation of the Emergencies Act (Public Order Emergency Commission, 2023).

The War Measures Act

The precursor to the Emergencies Act was the War Measures Act, dating back to 1914. It was intended to give the Canadian government extra powers during times of war, invasion and insurrection (Parcasio, 2019). Used three times in total, including during both World Wars, the last time the War Measures Act was invoked occurred during the 1970 October Crisis. In a controversial move, Prime Minister Pierre Elliott Trudeau brought in the military after a series of kidnappings and bombings were perpetrated by Quebec separatists (Lewson, 2020).

When the Emergencies Act succeeded the War Measures Act in 1988, it introduced changes regarding how the federal government can use extraordinary powers in times of crisis. Those changes include compensating people affected by government actions during emergencies and provisions of the Act being subject to the Canadian Charter of Rights and Freedoms (Smith et al., 2020).

Extraordinary emergency measures

To quell the disruptions of the 2022 so-called Freedom Convoy, the extraordinary emergency measures enacted under the auspices of the Emergencies Act included the regulation or prohibition of public assembly, facilitating actions to designate and secure protected places, empowering police to compel companies to provide service, and regulating or prohibiting the use of property to fund or support blockades, among others (Smith, 2022).

.One application of the Act was to quickly facilitate direction to heavy lift tow trucks to remove the transport trucks occupying downtown Ottawa's Parliamentary Precinct. When Ottawa was under siege in February 2022, one of the largest response challenges was removing approximately 500 heavy transport trucks blockading Ottawa (Rozdilsky, 2022). Many tow truck companies were reluctant to provide services to dismantle the convoy blockade, because tow truck companies helping the authorities started receiving threats (Tunney, 2022b).

Image: A heavy lift tow truck on standby to remove blockades during Freedom Convoy protests in downtown Ottawa on July 1, 2022. During February 2022, the Emergencies Act indemnified tow trucks acting on behest of authorities. © Dr. Jack L. Rozdilsky, reproduced with permission.

According to testimony provided during the Public Order Emergency Commission's inquiry, the Ontario Provincial Police Commissioner told the commission that the Emergencies Act was used to compensate and indemnify tow truck operators (Tunney, 2022a). The Act was not used to compel tow truck companies to provide services, even though it could have been legally used in that way. Indeed, the devil is in the details.

The Act enabled indemnification, which provides tow truck companies to be compensated for any cost or damages or future legal issues encountered. What has been termed as "broad and high-risk indemnification from the province for loss and damage" would have taken a long time to provide with existing legislation (Dickson and McLeod, 2022). However, under the provision of the Emergencies Act it was processed quickly and smoothly, essentially removing bureaucratic red tape.

Implications for emergency management

It is not a question of if, but when a complex emergency will strike Canada again. It is rare in the day-to-day work of most emergency management practitioners that one would need to consider such a last resort circumstance. It is too soon to say if future federal leaders will act in ways to normalize the use of the Emergencies Act or if provincial leaders will be able to handle emergencies before they rise to the level of requiring federal intervention.

.The circumstances of February 2022 provided us with a real-life example of how the threshold was crossed to the last resort. A situation of protests, blockades, and occupations by disgruntled citizens was met with numerous shortcomings in response activities. The commission's inquiry highlighted the lackluster Ontario provincial response to the Ottawa blockades, resulting in a political and policing breakdown that ultimately required the invocation of the Emergencies Act (Levitz, 2023).

The emergency management community should take pause in realizing that it is possible our local and provincial response actions or inactions can fail upwards, resulting in the highest levels of national political, social, and legal turmoil when the last resort of the Federal Emergencies Act becomes necessary to manage the crisis.

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Build Back Better, Together with Tribal Chief Tyrone McNeil

Video presentation by Tribal Chief Tyrone McNeil, summary written by Cindy Marven

On January 12, 2023, Preparing our Home hosted an online sharing circle, led by Tribal Chief Tyrone McNeil, to provide insight into the formation of the Emergency Planning Secretariat (EPS), a non-political organization created to coordinate Mainland Coast Salish-led all-hazards disaster management, and the Indigenous-led Build Back Better, Together (BBBT) initiative launched after the devastating atmospheric Lower Mainland flood events in November, 2021.

*See the full video **here.***

In this video, Tribal Chief McNeil shares the rationale for forming the EPS and for developing the Disaster Resilience Regional Action Plan, Hílekw Sq'eq'o ('get ready, together' in Hal'qeméylem, a Coast Salish dialect) involving 31 Mainland Coast Salish communities and discusses the Build Back Better, Together Collaborative (BBBT).

The Emergency Planning Secretariat (EPS)

The EPS and Hílekw Sq'eq'o are founded on, and informed by, the four priorities outlined in the Sendai Framework for Disaster Risk Reduction, ISO 31000 (Risk Management), the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP), the BC Government's Declaration on the Rights of Indigenous Peoples Act, Mainland Coast Salish community values, and is aligned with the 'whole of society' approach to rightsholder and stakeholder engagement embedded in the Sendai Framework. In developing the EPS and Hílekw Sq'eq'o, Mainland Coast Salish communities ensure that their rights and values are infused in an effective emergency and disaster management plan for their communities.

> *"When we walk into a room, we are bringing our title with us, our rights with us, our thousands and thousands of years of history with us, our culture, our tradition, our spirituality. We bring everything with us all the time, because we can't let it go, it's too important, we have too many obligations to our future generations, to put it down at any time"* (Tribal Chief McNeil - 8:35).

> *"...I know that a lot of you are like us, where this is so much more than human interests. We are really interested in that broad ecological footprint, the broad natural landscape. Not only was it a lack of recognition of our rights, it was a lack of recognition of the need to do things as resilience as possible, as nature-based as possible"* (Tribal Chief McNeil - 10:50).

The EPS and Hílekw Sq'eq'o were formed in recognition of the need to coordinate emergency and disaster management across the 31 Mainland Coast Salish communities (representing about 13,000 people) and to provide an efficient mechanism for interacting and communicating with emergency and disaster management efforts of other levels of government, locally, provincially, and federally, and to proactively identify risks and strategically plan and prepare for them.

Regarding Hílekw Sq'eq'o:

> *"This is our plan. We're drafting the plan for our own purposes, for our own needs, that reflects who we are. Following Sendai, of course, and living through Lytton and November 2021. We realized that the whole ESS side of EM here in BC is completely inadequate. It is not developed or maintained in a way that has folks, an entire town, displaced for more than a year or more"* (Tribal Chief McNeil - 19:07).

A second key element underlying the formation of the EPS is to build skills and competencies among Mainland Coast Salish people so they are able to perform vital functions and roles in emergency and disaster management.

> *"Although we all learn differently, everyone has the ability to learn, the skills and competencies. It's how we get there, that changes, that is unique to their needs. So because of that, we are building what we call a Tactile Capacity Development Plan"* (Tribal Chief McNeil - 22:28).

> *"...It's got to be tactile, it's got to be relevant to them. It's got to be hands on, real world experiences. So we are bridging the training with mock exercises, real-world exercises so you put the skills to use on a regular basis so you don't forget them"* (Tribal Chief McNeil - 23:02).

The Build Back Better, Together Collaborative

Following the November 2021 Lower Mainland floods, the Indigenous-led Build Back Better, Together Collaborative (BBBTC) was formed because neither the BC government nor federal government had a policy or funding methodology for building back better.

> *"I really appreciate that part of Sendai, that everyone is part of the solution scenario. We continue to promote that. You can't lose sight of sustainable communities and economies. That's ours, the local towns, the cities, and whatnot. That piece is important"* (Tribal Chief McNeil - 28:38).

BBBTC includes the Emergency Planning Secretariat, Stó:lō Tribal Council, UBC Coastal Adaptation Lab, School of Architecture and Landscape Architecture, Ebbwater Consulting, Watershed Watch Salmon Society, Resilient Waters Project, West Coast Environ-

mental Law, and Kerr Wood Leidal. The BBBTC follows a similar Indigenous values- and rights-infused framework to the EPS (see the BBBTC report on Flood Recovery, Resilience and Reconciliation).

> *"...unless we better respond to the climate crisis protecting infrastructure in a resilient, nature-based fashion, you know, if we get all of those things in place, I feel really strongly that not only will it reduce risk to any infrastructure capital, but it will reduce risk, and hazard, and harm to us as well"* (Tribal Chief McNeil - 35:03).

About

The **Emergency Planning Secretariat** (EPS) is a non-political organization that supports 31 communities in British Columbia in improving emergency planning and preparedness at the local and regional levels. To learn more visit: https://www.emergencyplanningsecretariat.com/

Tribal Chief Tyrone McNeil is Stó:lō and a member of Seabird Island Band. He has extensive experience working to advance First Nations languages and education, collaborating with First Nations across the country, and developing agreements and partnerships with government, in addition to managing a First Nation construction company that employs up to 70 Indigenous men and women, with expertise in Occupational Health and Safety, safety audits, human resources management, operations and budgeting in civil construction and pipeline industries.

Tribal Chief McNeil works closely with the Indigenous Advisory and Monitoring Committee (IAMC) for the Trans Mountain Expansion and Existing Pipeline, including as a member of several leadership and sub-committees, driving changes to improve practices of regulators to better align with the United Nations Declaration on the Rights of Indigenous Peoples, and to advance reconciliation.

You belong: Toward more inclusive emergency management

By Lilia Yumagulova

In this new series, we address key issues for diversity and inclusion in emergency management.

Diversity and inclusion are increasingly recognized as key ingredients to fostering a sense of belonging. We do better when we feel that we belong. One study has shown that a high sense of belonging was linked to a 56% increase in job performance, a 50% drop in turnover risk, and a 75% reduction in sick days. To increase a sense of belonging in our field we can start with small steps towards diversity and inclusion as individuals, organizations, and a broader professional culture. In this article, I focus on the evolution of terminology and the overuse of acronyms, particularly in relation to inclusiveness and diversity in the field of emergency management.

Keep up with evolving terminology

Our evolving understanding of the world is reflected in the language we use. For example, the Sendai Framework for Disaster Risk Reduction (the Framework) moved away from using the inaccurate term 'natural disaster'. This terminology change recognized decades of research that has shown that disasters are socially constructed and that societies make choices that will directly impact whether a hazard becomes a disaster.

The Framework was also the first global DRR framework to refer to Indigenous Peoples as key 'stakeholders'. In a field that relies on relationships, the word 'stakeholder' is commonly used to describe key partners in emergency management. This term has deep colonial connotations. As described by the Government of British Columbia (Terminology in Indigenous content), "When land acquisition was happening, this term referred to the allotment of land to settlers. Settlers were given wooden stakes to claim their plot of land prior to any treaty or land negotiations with Indigenous Peoples." When speaking about Indigenous Peoples as partners in emergency management, a more accurate and respectful term would be Rights and Title holders, rather than stakeholders, clearly acknowledging Indigenous rights and title.

This growing awareness of the importance of language is also reflected in how emergency services are framed. For example, Emergency Social Services is a program designed to provide for short-term needs of evacuees in an emergency. In British Columbia, a subtle, but significant change in program title happened by renaming Emergency Social Services to Emergency Support Services. This was done in response to feedback from First Nations who felt very uncomfortable with 'social services', a term referring to actions and concepts that have brought harm to communities through colonially-administered programs. Unfortunately, when we use the ESS acronym for this program, this nuance is lost.

Terminology used in many government programs needs revision. For example, Tarina Colledge, Métis and holistic emergency and disaster manager, pointed out that the word 'assistance' in the federal Disaster Financial Assistance Arrangements and provincial programs such as Disaster Financial Assistance set a false expectation among the public that "there is financial help rather than partial reimbursement for out-of-pocket restorative expenses. More than a year after the atmospheric river events of 2021 in B.C., citizens are still commenting in the media about how they have not yet received their funding from the province to repair the damages they experienced." Tarina suggests that focus groups could inform needed terminology changes with the goal of increasing the precision of language for high level key programs. She calls it a "namey-ology process", which seems to hit the mark no matter the audience as opposed to 'nomenclature', which can be a difficult word to understand.

Avoiding a MIC. KEY. MOU. SE. operations centre: Unravel the acronyms

AHRA. AHIMT. FLNRORD. PEMSAP. Abbreviations are a mark of most specialized fields and in the high paced field of emergency management, shortcuts are often used for memorability and speed. As shared by Genevieve Fox, "Three letter acronyms (TLAs) and the like aren't used intentionally to harm or confuse… rather they are trade lexicon that aids with brevity and streamlining in often time sensitive environments (military, paramilitary, responder, and emergency management fields)."

Abbreviations that reduce inclusivity may have been intended to support efficiency, based on assumptions that we all process things similarly in terms of language comprehension and hearing ability, which is often not the case. Unfortunately, overuse of acronyms can result in a lack of clarity and alienation, especially for newcomers to a field, people with hearing disabilities, or for people whose first language is not the language primarily in use. Healthcare acronyms, legal acronyms, and people in the industry "just making up their own" acronyms add complexity. As Helen Miller noted, "Clarity and interoperability are the goals. Often that is forgotten."

In addition to overuse of acronyms by professionals, provincial ministries are often changing their names and acronyms. "It is not a 'given' that everyone outside of government (or in government for that matter) will know about the changes and shifts," Cher King noted. MoF, FKA FNLRORD, IYKWIM.

The use of acronyms is especially challenging in a multilingual context with over 60 Indigenous languages, English, French, and many global languages spoken in Canada. Nicole Spence commented, "Acronyms do not translate well, thus reducing accessibility." Paul-Émile Auger, Spécialiste en Gestion des Urgences/Emergency Management Specialist, further added: "The paradox is that many ICS-trained people use insider acronyms, where we should use a plain, common vocabulary. Also, often EM terms are not translated consistently in French. We can sometimes see 'gestion des urgences' or 'gestion d'urgences' or 'gestion de situations d'urgences' or 'gestion des mesures d'urgence'. It should be 'gestion des urgences' in the majority of cases, in my opinion. Also, many inconsistent translations exist in the various flavors of ICS. I think it stems from the fact that many training programs or certifications just don't exist in French, creating a gap."

Several community members have shared tips for increasing inclusivity and communicating clearly:

- Provide a commonly-used list of acronyms for folks new to a setting. Have a discussion with partner agencies and organizations about the terminology they use. As Mēsha Richard shared: "There's nothing worse than zooming in on a meeting and hearing external teams drop terms you aren't familiar with in an assumption that everyone must already know them. This is what ICS/IMS was meant to address, but as we know this can only take things so far."
- When new players are present, articulate and explain acronyms in addition to, or in lieu of, provision of a reference list. As Genevieve Fox noted, "Inclusive communications in such cases and situations only benefit all."
- Develop a "Plain Language and Common Terminology in Incident Command System (ICS)" reference document; an approach taken by Dean Monterey and a colleague. "We find students don't always understand the difference… Let alone acronyms. I once knew a person that could complete entire sentences in acronyms. I ask students to unravel the acronyms, MIC. KEY. MOU. SE."
- Have a no acronyms policy. "It's very hard. I even think in acronyms," Jeff Warren noted. "When teaching EM classes, I hand out a list of common acronyms to each student to cover for the inevitable acronym habit."
- Use infographics and images. As Shannon Peterson, Senior Project Manager, Integrated Partnership for Regional Emergency Management (IPREM) shared: "Accessibility! Using icons or pictures including infographics are a great way to convey information without a lot of text, making it easier for newcomers, neurodiverse, and the general public to understand and digest information."

There is a difference between using acronyms in written communication for an insider audience versus communicating verbally with members of the public (or long-suffering family members). "If you are not on the inside, you are on the outside," noted one partner of an emergency manager.

Ultimately, the overuse of acronyms by service providers especially isolates people who are experiencing a disaster. Christine Taylor, a bilingual emergency management professional, reminds us that, "The goal should be that everyone understands what we are saying and asking of them. Whether we are in the emergency operation centre, in a meeting with colleagues, asking for funding, explaining the situation to residents, or providing situation updates to decision makers which may impact residents."

We can increase inclusivity and diversity in emergency management and the feeling of belonging, by being open to evolving terminology, decoding the acronyms, and using plain language. Whether you are a professional or a student or a resident, "always speak up to ask for clarification. Chances are, you aren't the only person in the room who doesn't know the term, misheard it, or misinterpreted it", suggested Mēsha Richard.

Acknowledgements and Thanks

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Next in the series: Privilege in emergency management; Self-care in emergency management

Several community members stressed that to increase inclusivity, there is a need to acknowledge privilege and destigmatize selfcare within emergency management as a profession. We will take a deeper look at these two issues in our next articles. Do you have tips or a story that you would like to share about privilege and self-care in emergency management as an individual, an organization, or a field of practice? Please email us at editorhaznet@gmail.com with a subject line "Diversity and inclusion".

FLNRORD = Ministry of Forests, Land, Natural Resource Operations and Rural Development

AHIMT = All-Hazard Incident Management Team

IYKWIM = If you know what I mean.

FKA = formerly known as.

PEMSAP = Ontario's Provincial Emergency Management Strategic Action Plan

Lilia Yumagulova is the Editor for HazNet.

Resources for ethics in emergency management

By David Etkin

Over the past few years, there has been an increasing focus on the importance of ethics to the emergency management profession. This article provides a description of some recent resources that have been published to support emergency management students and professionals in developing this aspect of their profession.

A code of ethics for EM Professionals

The first, and probably the most important resource, is a *Code of Ethics and Professional Standards of Conduct for Emergency Management Professionals*. This code is the result of a collaborative project organized by the Federal Emergency Management Agency's Ethics Working Group. A diverse group of academics and professionals comprised the working group, all of whom donated large amounts of their time to this project. The code has gone through a public review and revision process. It is intended to be a living document that will evolve over time, and will be a critical component in the professionalization of emergency management. Thus far, it has been adopted by The Salvation Army and there is hope it will be broadly adopted within the profession.

The ethical emergency manager

Another resource is a textbook for teaching ethics to emergency management students at York University, called *The Ethical Emergency Manager: Issues, Morality and Dilemmas. 3rd Edition*. Over my career teaching disaster and emergency management (DEM) ethics, I have found that although there were many resources on ethics generally, very little was devoted to DEM ethics in particular. This textbook provides an overview of ethical theories and discusses a number of practical examples of how ethics is relevant to the DEM profession. Topics include moral development, ethical risk assessment, the precautionary principle, victim blaming, duty to respond, land use planning, humanitarianism, lifeboat ethics, Eastern perspectives on ethics, disaster financial assistance, and pandemic planning. An electronic version is available through the CRHNet Library.

Exploring ethics webinar series

Finally, a third resource is the Exploring Ethics Webinar Series, a series of presentations on disaster and emergency management ethics from nine different researchers, developed in collaboration with the Copenhagen Centre for Disaster Research. These webinars are part of a larger project that will eventually result in a model for DEM that focuses on the ethical aspects of the functions performed by emergency managers, and a set of case studies looking at the ethical aspects of disasters.

Visit the CRHNet Library to find the Code of Ethics and textbook The Ethical Emergency Manager.

Dr. David Etkin is a professor of Disaster and Emergency Management in the School of Administrative Studies at York University.

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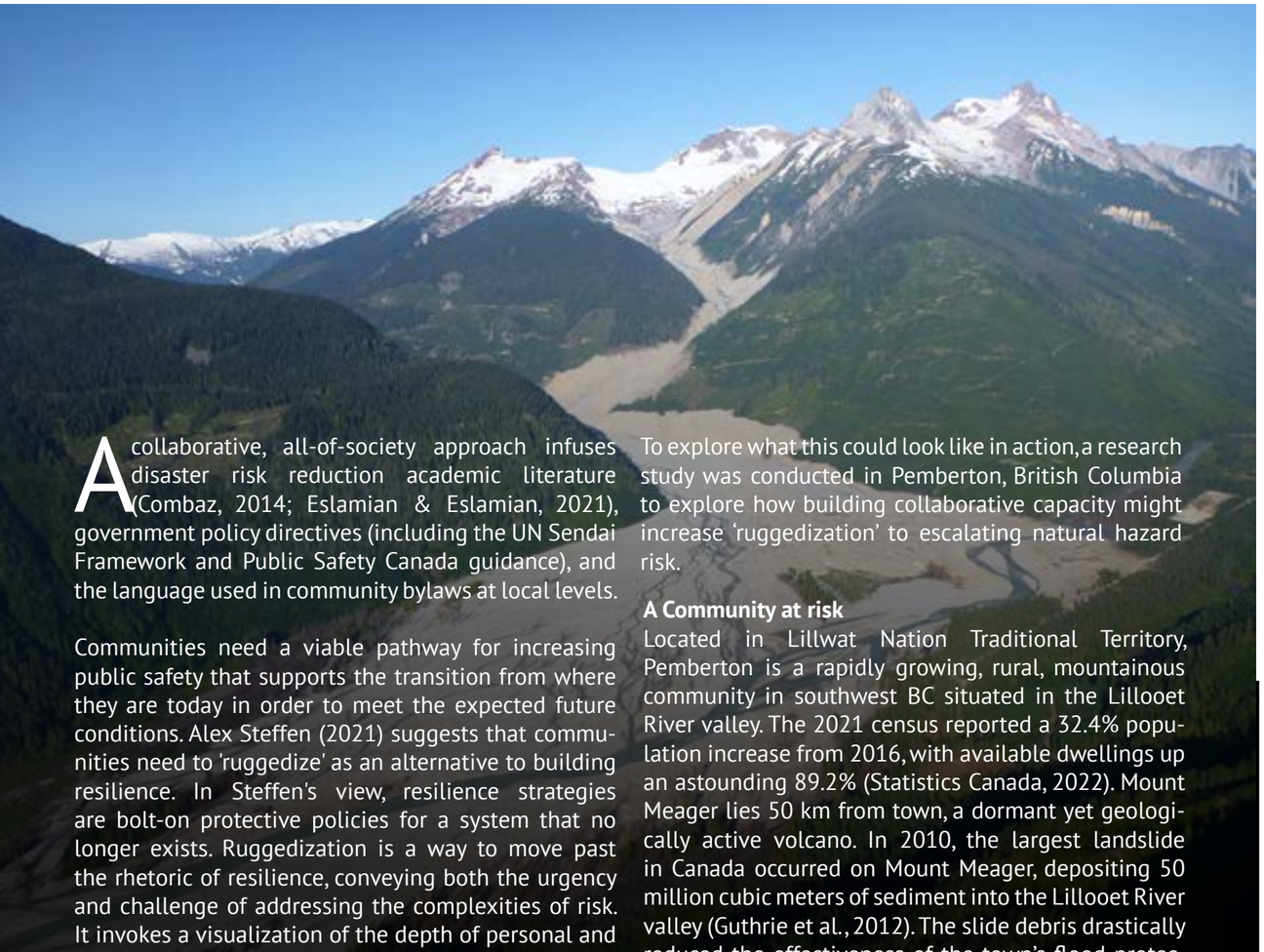
Moving past the rhetoric of resilience

By Veronica Woodruff



A collaborative, all-of-society approach infuses disaster risk reduction academic literature (Combaz, 2014; Eslamian & Eslamian, 2021), government policy directives (including the UN Sendai Framework and Public Safety Canada guidance), and the language used in community bylaws at local levels.

Communities need a viable pathway for increasing public safety that supports the transition from where they are today in order to meet the expected future conditions. Alex Steffen (2021) suggests that communities need to 'ruggedize' as an alternative to building resilience. In Steffen's view, resilience strategies are bolt-on protective policies for a system that no longer exists. Ruggedization is a way to move past the rhetoric of resilience, conveying both the urgency and challenge of addressing the complexities of risk. It invokes a visualization of the depth of personal and community resolve required to quickly and collaboratively prepare for future disasters.

To explore what this could look like in action, a research study was conducted in Pemberton, British Columbia to explore how building collaborative capacity might increase 'ruggedization' to escalating natural hazard risk.

A Community at risk

Located in Lillwat Nation Traditional Territory, Pemberton is a rapidly growing, rural, mountainous community in southwest BC situated in the Lillooet River valley. The 2021 census reported a 32.4% population increase from 2016, with available dwellings up an astounding 89.2% (Statistics Canada, 2022). Mount Meager lies 50 km from town, a dormant yet geologically active volcano. In 2010, the largest landslide in Canada occurred on Mount Meager, depositing 50 million cubic meters of sediment into the Lillooet River valley (Guthrie et al., 2012). The slide debris drastically reduced the effectiveness of the town's flood protection infrastructure, significantly increasing flood risk to approximately 7,000 residents (NHC, 2018).

Caption: View of Mt. Meager landslide from the air. This is the site of Canada's largest known landslide and debris has been filling the Lillooet River, increasing flood risk for communities downstream, such as Pemberton. © Veronica Woodruff, reproduced with permission.

Engaging the Pemberton community

In 2021, a research project brought together representatives from local governments, elected officials, response agencies (e.g., fire, medical, police), social service providers, businesses, non-profit organizations, and residents to discuss the current and future state of community collaboration in the face of the town's growing flood risk. The research collaborators used artwork to open dialogue on meaningful next-step actions. Participants noted that experiencing risk creates strong community bonds. For example, the 2021 flood during the heat dome was described as an opportunity for collective, adventurous, meaning-making, described by Participant #1 as, "we actually called it an 'evacu-cation' with our friends…because it was really fun actually, but stressful for them. Well, obviously stressful for everyone."

Participants recognized that both benefits and barriers exist to collaboration and that effective communication is a critical component of collaborative action.

Commit to working together

Participants observed that where pre-existing relationships with local contextual awareness existed, collaboration between local agencies was simplified even when jurisdictional boundaries conflicted or overlapped. However, participants noted that transcending the siloed, vertical lines of provincial or federal authority during the mitigation, planning, and recovery phases of emergency management made collaboration challenging. Stroh (2019) describes this dynamic as "accidental adversaries" (p. 20): Two organizations strive for the same goal (e.g., flood protection), yet isolated actions that suit one entity can inadvertently limit the success of the other, often unbeknownst to either participant, and ultimately compromise the whole system.

Although multiple barriers to collaboration were identified, there was a resounding willingness and desire to transcend boundaries and contribute to processes that could increase community 'ruggedization'. Participants called for funding to support and increase collaboration, for defining a process for engaging community members and professionals, and for using existing local government committees to recruit expert contributors (e.g., social services personnel, medical professionals, other first responders). Implementing these collaborative structures would help Pemberton move beyond resilience into action and ruggedize the system to withstand the bumpy road ahead.

Caption: Significant debris and sediment has been added to the Lillooet River. © Veronica Woodruff, reproduced with permission.

The need for adaptive governance

The most complex recommendation emerging from this collaborative research project was for policymakers to implement adaptive governance strategies. The research participants noted multiple examples of policies, conflicting mandates, and perceived risk aversion that were increasing risk scenarios for the community. For example, the BC Ministry of Municipal Affairs recently shifted its funding policy so municipalities, regional districts, or Indigenous communities are eligible for funding only if they own the infrastructure of interest. Unfortunately for Pemberton, local dikes have been owned and managed by a legislated Improvement District

since their construction in the late 1940s. In addition, the option to apply for funding through collaborative agreements has also been removed. Local representatives must now spend significant time advocating for funding, which uses already limited resources and delays project implementation. Under an adaptive governance model, this unintended policy impact could be quickly revised once it was revealed.

As highlighted by the UN (2022), current governance models underestimate the complexity of modern interconnected systems and the cascading risks associated with multiple tipping points, and thus have difficulty embracing the transformation required to meet this new reality. Djalante et al., (2013) characterizes adaptive governance as "notions of governance that are more flexible and innovative and that encourage learning to better manage uncertainties and system complexities" (p. 2111).

Implementing an adaptive governance model will require embracing some level of risk, while building in appropriate monitoring systems. The key is transforming strong situational understanding into action and having the ability to adjust as necessary, without bureaucratic delays, based on observed repercussions of policy direction or mitigation tactics. Adaptive governance is an important strategy for 'ruggedization' because it allows communities to take action immediately to reduce their risks, adjusting as necessary, without having to wait for the perfect conditions before they can begin to build resilience. As one research participant noted, perfection cannot impede progress when trying to mitigate the rapidly increasing risk. There is no need to forego striving for the highest standards but there is a requirement to create viable pathways to attain these necessary aspirations for community safety.

The collaborative research project illustrates the value of collaborative effort and good communication, the strength of shared community experience and knowledge, the advantages of building on existing networks, and the benefits of and need for adaptive governance to support ruggedization in the face of our changing climate.

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Veronica Woodruff has been working as an environmental professional for two decades in government, non-profit organizations, and consulting. Her deep community connections and boundless fascination with the natural processes of BC Watersheds, converged to support the completion of her Master of Arts in Leadership from Royal Roads.

Exploring the potential for insurer-government collaboration in flood risk management

By Andrea Minano

Considerable progress has been made in Canada over the last 10 years to understand and manage flood risks more effectively. The 2013 Southern Alberta floods were a defining moment in Canada's history that spurred many changes and renewed investment in flood risk management (FRM), such as the launch of the National Disaster Mitigation Program in 2015 (Government of Canada, 2018).

At the same time, actors in the private sector, notably the insurance industry, have become prominent advocates and stakeholders in FRM. For example, in 2014 the Insurance Bureau of Canada (IBC) invested in the development of a first-of-its-kind national flood model for Canada to support the launch of residential overland flood insurance products the following year (Calamai & Minano, 2017). Prior to 2015, home insurance policies did not include overland flood (i.e., insurance for property losses caused by river overflow or intense rainfall) (IBC, 2019a). This gap in home insurance policies became particularly noticeable during the recovery period of the 2013 Alberta floods, since most private losses incurred during this event were not covered by insurance (Haney, 2017).

Has Canada made enough progress in flood risk management?

The Sendai Framework of Disaster Risk Reduction emphasizes the need for "good" governance and cross-sector collaboration to overcome weaknesses in disaster management. The Sendai Framework explicitly mentions insurance and the need to "promote mechanisms for disaster risk transfer…to reduce the financial impact of disasters on Governments and societies" (UNISDR, 2015, p. 19). In Canada, it is estimated that 40-60% of residential properties are now insured for flood, a notable change given that less than 10 years ago this type of insurance was unavailable (Public Safety Canada, 2022).

A persistent concern with Canada's residential flood insurance market is the issue of high-risk properties that insurers assert are too risky or costly to insure (IBC, 2019b). A recent figure from Public Safety Canada indicated that high risk properties may be quoted flood premiums up to $15,000 a year (2022). .

Could a public-private partnership reduce the number of high-risk uninsurable properties?

Research is underway that explores how insurance companies and Canadian municipalities could work together to effectively reduce the number of high-risk uninsurable properties.

A survey of Canadian municipalities (n=59) and insurance companies (n=7) in 2021 and 2022 revealed a strong appetite in both the public and private sectors to access each other's data, such as municipal flood management infrastructure data and locations that insurance companies have identified as high risk of flood. Respondents also favoured the development of a data-sharing platform as a means to access and share data between sectors, and identified some benefits that could result from data sharing, such as increased confidence in insurers' flood risk assessments. Nevertheless, respondents raised concerns and considerations about cross-sector data sharing, including data privacy, data quality, and intellectual property, which warrant careful consideration.

The Resilience Bridge Platform for cross-sector data sharing

Interviews with municipalities and insurers are underway to further investigate the idea of data sharing. To assist these conversations, a prototype data-sharing platform, the Resilience Bridge Platform, has been developed and will be evaluated by municipal and insurance sector representatives to aid in understanding the prototype's real-world application, how it may impact internal decision-making and analytical processes, and whether it could be used as a tool to incentivize actions that could realistically lead to changes in flood insurance availability and pricing.

Findings of this study could inform the development of a collaborative mechanism that reflects the interests of both sectors and helps overcome persistent issues with Canada's residential flood insurance market.

Get in touch

To learn more about this work, contact Andrea Minano at aminano@uwaterloo.ca

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Andrea Minano recently finished her doctoral studies in the Department of Geography and Environmental Management at the University of Waterloo.. Andrea is a specialist in Geographic Information Systems and has previously worked for municipal, provincial and federal governments as well as the insurance industry. Andrea's research and work experience are highly interdisciplinary ranging from visualization of flood risk, community-based climate adaptation and flood risk management policy. Andrea's current research focuses on the role of data governance for improving the effectiveness of flood risk management in Canadian cities. Andrea holds a Joseph-Armand Bombardier Canada Graduate Scholarship for her doctoral research.

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