

Policy Brief No. 121 – December 2017

Engaging Canadians in Flood Risk Management

Lessons from the International Community

Jason Thistlethwaite, Daniel Henstra, Andrea Minano and Sarah Wilkinson

Key Points

- Flood risk management is most effective when responsibilities are defined and shared among stakeholders, and when citizens feel personal responsibility to reduce their flood risk.
- International experience shows that effective public engagement starts at the community level, but must be supported by accurate and locally relevant flood risk information.
- Canada needs a strategy to engage Canadians in flood risk management that involves educating them about personal and community flood risks and encouraging them to take responsibility to protect themselves and their property from floods.

Introduction

In recent years, unprecedented flooding has caused billions of dollars in damages across Canada. The 2017 spring floods in British Columbia, Ontario, Quebec and the Maritimes served as a reminder that flooding is a national issue that deserves attention from governments, private stakeholders and the public (Bradley 2017; CBC 2017a; Canadian Press 2017). These events revealed that Canadians are typically unaware of their flood risk and are caught off-guard by the economic burden that flooding imposes. In eastern Ontario, for example, it was only after their properties were flooded that cottage owners discovered that damages to secondary residences are ineligible for financial compensation through the province's disaster assistance program (Fagan 2017). Similarly, after widespread basement flooding in Windsor, Ontario, 40 percent of affected homeowners were denied financial assistance, while another 40 percent of claims remain in limbo (CBC 2017b). Too often, property owners are left to pay out-of-pocket for repairs and restoration, which can amount to tens of thousands of dollars, depending on the severity of the damage and the value of the property and its contents (Beeby 2017).

About the Authors

Jason Thistlethwaite is a CIGI fellow, as well as assistant professor in the School of Environment, Enterprise and Development in the Faculty of Environment at the University of Waterloo. At CIGI, Jason's research focuses on the implications of the new environmental and climate change risks disclosure regime on the financial sector, and on recommendations to help align policy and industry's resources toward an effective approach to mitigate climate change. To inform this research, Jason works directly with business and government leaders in the insurance, banking, real estate, building and investment industries. His research has been published in a number of academic and industry journals, and he is a frequent speaker and media contributor on Canada's growing vulnerability to extreme weather. Jason holds a Ph.D. in global governance from the Balsillie School of International Affairs.

Daniel Henstra is associate professor in the Department of Political Science at the University of Waterloo. Daniel's research centres on public administration and public policy, with a focus on emergency management, climate change adaptation and flood risk governance. Within these subject areas, he investigates multilevel policy processes involving federal, provincial and municipal governments, and the complex, networked relationships among elected officials, public servants, stakeholders and the public.

Andrea Minano is a research manager at the University of Waterloo's School of Environment, Enterprise and Development. She manages a team of researchers who specialize in flood policy and disaster risk management. She graduated in 2015 with a master of science degree in geography from the University of Waterloo. Her research areas include flood risk management in Canada, geovisualization of climate change impacts and climate adaptation.

Sarah Wilkinson is a graduate of the University of Waterloo's International Development program. She has an honours bachelor of environmental studies degree, with a minor in political science. Her practice specialization focused on environmental conservation education and community engagement practices in Western Africa. She is currently a research assistant with the Flood Policy Research Group at the University of Waterloo.

A recent survey conducted at the University of Waterloo illustrated this flood awareness gap: about 94 percent of Canadians living in designated flood risk areas do not know they are at risk (Thistlethwaite et al. 2017). This is problematic for two reasons. First, people who perceive little risk from floods are unlikely to adopt personal protection measures to reduce and manage flood impacts. Indeed, the survey indicated that a majority of Canadians are taking little action to protect their property and less than one-quarter intend to buy flood insurance. Second, eligibility for federal and provincial disaster assistance has been tightened, shifting greater responsibility to property owners to protect their property and finance recovery, but these new expectations have not been effectively communicated to Canadians.

Like Canada, other countries have faced rising flood costs and have sought ways to share responsibility for flood preparedness and recovery. In many states, this has resulted in a policy shift toward integrated flood risk management, a holistic approach to flooding that clearly distributes responsibilities among governments, private actors and citizens, and employs multiple strategies to reduce and manage flood risk. In Germany, for example, efforts to increase public risk awareness assisted in reducing flood losses by 40 percent (Thieken et al. 2016). The experiences of other countries offer valuable ideas about how to strengthen flood risk management in Canada.

This policy brief scans international initiatives designed to foster flood risk awareness, engage the public and encourage behavioural changes that support flood risk management. From this analysis, there are two overarching lessons that can inform Canadian flood risk management policy. First, public risk information, in particular in the form of flood risk maps, is fundamental to raising awareness among citizens, achieving transparency and increasing the legitimacy of flood risk policy decisions (for example, regulating flood plain development). Second, to induce the public to participate in flood risk management, citizens must perceive flooding as a serious problem — one that threatens their home and community — and acknowledge that they have a responsibility to protect themselves and their property. Locally appropriate public engagement campaigns that resonate personally with citizens are most effective in motivating protective behaviour. The policy brief concludes with

three policy recommendations on how to better engage Canadians in flood risk management.

Informing Canadians through Flood Risk Maps

International experience shows that flood risk maps are a crucial source of information for flood risk management (Hegger, Driessen and Bakker 2016). Beneficiaries of this information include emergency managers, planners, engineers, realtors, lenders, insurers and the public. Whereas flood maps have typically been used in Canada for planning purposes (for example, regulating development on flood plains), they can also be a valuable tool for public risk communication that increases awareness of flood risk and socializes citizens to share responsibility for risk reduction (Hagemeyer-Klose and Wagner 2009). Publicly accessible flood risk maps are an important reminder for citizens, since floods may occur infrequently and may not be part of public memory.

Canada's approach to flood maps differs from its international counterparts' in two key ways. First, flood maps in other countries are typically created and maintained by national and regional governments and then distributed to local authorities to support planning decisions and public awareness. Second, other countries typically make flood maps publicly available online, coupled with additional, context-specific information, such as photographs of previous flood events and stories of personal hardship in dealing with floods (CAPFLO [Local Resilience Capacity Building for Flood Mitigation] 2017a).

In Canada, flood map production is decentralized and fragmented. Local organizations (for example, municipalities or conservation authorities) are tasked with developing their own maps and flood information. This approach to flood map production continues to be supported through the National Disaster Mitigation Program, which encourages individual communities to create their own maps (Public Safety Canada [PSC] 2017). Meanwhile, most maps are outdated — with a median age of 18 years — and development in flood-prone areas has continued (MMM Group 2014). This fragmented approach to flood risk

mapping is out of step with Canada's international counterparts, who typically coordinate map production and employ dissemination strategies designed for public engagement. A review of contemporary practice suggests:

- maps are created primarily by regional and national governments, who often work with communities to integrate local knowledge and feedback into flood modelling processes (de Moel, van Alphen and Aerts 2009; Alexander et al. 2016);
- public access to maps is provided by an authoritative and trusted organization (for example, the Environment Agency in the United Kingdom; the Austrian government in partnership with insurers) (Alexander et al. 2016);
- maps are updated regularly in recognition that flood lines are not static (for example, the European Union and the US Federal Emergency Management Agency [FEMA] require maps to be revised every five to six years) (European Commission 2017; FEMA 2006, 2017);
- maps are typically made publicly accessible through an online flood information portal, as evidenced in Australia, Belgium, the Czech Republic, England, Finland, France, Germany, Ireland, Italy, Luxembourg, Poland, Sweden, Switzerland, the Netherlands and the United States (de Moel, van Alphen and Aerts 2009); and
- other countries have established coordination strategies whereby national governments provide insurers with flood maps (for example, England) or governments and insurers partner to create and release flood maps publicly (for example, HORA project in Austria) (ibid.).

Flood maps that are made publicly accessible require context, so they must include different and additional information than those used by experts (such as hydrologists) (Hagemeier-Klose and Wagner 2009). A review of practices in other states suggests that public understanding of flood risk maps can be improved by:

- pairing maps with local information that the public can relate to, such as images of past floods (for example, height of flood waters) and personal stories from households that have experienced flooding (see Grand River Conservation Authority 2017);

- using searchable online map portals to support risk-awareness campaigns, particularly when floods are not part of recent public memory; and
- complementing maps with current information about the consequences of flooding (for example, costs of damage) and what citizens can do to address their personal risks (for example, seeking insurance) (Merz, Thieken and Gocht 2007).

The Government of Canada's Federal Floodplain Mapping Framework acknowledges some of these practices as critical for awareness and engagement (Natural Resources Canada and PSC 2017). It is also promising that Canada already has the technical infrastructure to make flood maps publicly available through the Federal Geospatial Platform initiative. However, at present, flood maps are often unavailable or not easily accessible to the public, making it difficult for property owners to know their risk unless they personally experience flooding. Furthermore, the maps that are available are outdated by international standards.

Strategically Engaging Canadians in Flood Risk Management

Although it is an important ingredient, providing information about flood risk is not enough to generate behavioural change among citizen groups (Mileti and Fitzpatrick 1992; Parker, Priest and Tapsell 2009). International initiatives to increase public engagement in flood risk management vary considerably in scope and substance, but generally require community involvement in their creation and delivery. Despite their heterogeneous nature, several common factors increase the effectiveness of public engagement initiatives, including trust in authorities (that is, those leading public engagement initiatives), community feedback in flood risk campaigns, coordination across governance scales and methods that instill a sense of personal ownership in flood risk management.

Not all public flood awareness and engagement campaigns are effective (Bradford et al. 2012). One of the most cited reasons why citizens do not mitigate privately against flooding is a lack of trust in authorities (Lin, Shaw and Ho 2008; Armas

and Avram 2009; Griffin et al. 2008; Hagemeyer-Klose and Wagner 2009; Seifert et al. 2013; Albright and Crow 2015; Scolobig, De Marchi and Borga 2012; Grothmann and Reusswig 2006; Heitz et al. 2009). Trust is a critical factor in achieving public buy-in for flood risk management and sparking behavioural change within a community (Twigger-Ross et al. 2015; Hagemeyer-Klose and Wagner 2009; Armas and Avram 2009). For example, guided walks and discussion sessions in a flood-prone city in the Netherlands led by trusted local experts proved successful in educating citizens about historical floods and increasing willingness to self-protect (CAPFLO 2017a).

Effective public engagement campaigns build trust over the long term and are community-specific. In Germany, for example, flood risk information materials created by the national government to raise public awareness were found to be ineffective because they did not reflect the existing knowledge and needs of the public (Thieken et al. 2016). A national flood awareness campaign implemented by the Dutch government had similarly poor results, as it did not adequately account for the public's perception of their own flood risk (Bradford et al. 2012). Co-learning and co-building solutions between experts and non-experts are ways to effectively encourage public involvement in flood risk management (for example, public meetings that teach property owners about insurance). One of the key lessons following a two-year public engagement initiative in England was that the public was more receptive to community organizations (for example, grassroots groups) than the national government (Twigger-Ross et al. 2015; Thaler and Levin-Keitel 2015). Behavioural change is more likely when individuals are engaged in collaborative problem solving with professionals and peers, so that they are motivated by a belief in the efficacy of individual ideas or actions rather than being compelled to act by outside forces (Parker, Priest and Tapsell 2009).

Engaging the public in learning about personal and community flood risks and motivating behavioural change can be resource-intensive. Many communities lack the capacity to create and manage engagement campaigns independently, so there is a critical role for higher levels of government to support these initiatives by providing resources and guidance. In some countries, local initiatives are derivatives of national flood awareness and engagement

campaigns (for example, England and Germany). This implies an intergovernmental partnership whereby upper-level governments play a role in launching engagement campaigns and supporting their continued functions, while local governments facilitate long-term implementation by integrating flood risk management into existing programs and projects (for example, volunteer-run educational programs and including flood insurance information in existing emergency preparedness documents).

Finally, it is important to instill a sense of personal ownership in flood risk management. This can be accomplished in various ways, such as through community feedback on existing flood risk campaigns, information sessions on insurance and incentives to install protection measures (CAPFLO 2017b). For example, the German national government has created a "flood pass" system that enables property owners to request a flood risk assessment of their property. This assessment is then reviewed by an expert and, if it is approved, the homeowner will have access to private insurance and learn about ways to reduce the property's flood risk (Organisation for Economic Co-operation and Development [OECD] 2016). Without a sense of personal responsibility, citizens lack an incentive to take protective action. In the Netherlands, for example, heavy investment in structural flood defences and low public engagement in flood risk management have created a false sense of security among citizens, making it more difficult to convince them to prepare for floods (Kaufmann et al. 2016).

Policy Recommendations

The following recommendations are presented as an integrated approach to effectively inform and engage Canadians in flood risk management and are based on practices employed by the international community.

Create flood risk maps and make them available to the public. Flood risk maps are invaluable for spatial planning, emergency management and risk communication. Other countries have established systematic methods of creating and revising flood maps. A centralized mapping initiative in Canada would enable local authorities to focus on reducing their own flood risk rather than on investing scarce

time and resources in determining how to create accurate flood maps (Moghal and Peddle 2016). Maps should account for the changing nature of flood risk due to climate change by integrating adjustments based on future emissions scenarios. When sharing flood maps with the public, information must be packaged in a way that is both informative and compelling. Public flood maps should be paired with the following: historical flood data; actions that citizens can take to reduce risk before, during and after a flood (such as purchasing flood insurance); advice on mitigation measures that can protect personal property from flooding (for example, a clear explanation of costs and benefits might be helpful to spark action); and information about the real economic and personal costs of flooding. It is also important that flood risk maps be dynamic and updated regularly to reflect changes in land use, population growth, infrastructure changes and other relevant factors. There is social licence for this policy change in Canada: the survey referenced above indicates that 90 percent of Canadians are in favour of the public release of flood maps (Thistlethwaite et al. 2017).

Design and implement public engagement initiatives. Flood maps are only the start of the conversation. Effective public awareness and engagement campaigns emerge from individual community members, grassroots groups or the local authorities who are best positioned to engage members of the public. Effective awareness and engagement initiatives are sensitive to the audience and the social context, and national governments have a role in stimulating local initiatives. In England, for example, the Department for Environment, Food & Rural Affairs launched and coordinated an awareness and engagement initiative — the Pathfinder Scheme — but participating communities designed locally appropriate initiatives within the scheme (Twigger-Ross et al. 2015). These efforts were effective because trust and credibility were established as the foundation for co-learning with residents.

Leverage community resources to implement long-term engagement and awareness. Incorporating flood risk communication into existing public communication channels (for example, town hall meetings) is an effective and efficient way to implement public flood risk awareness

campaigns. It is also efficient to partner with local non-governmental organizations (NGOs), social enterprises and private actors to pool resources for flood risk awareness and engagement. For example, the United Kingdom’s National Flood Forum, a national charitable organization funded by government and industry, has helped implement flood action groups across England and has supported local capacity building for flood mitigation.¹ In Zaragoza, Spain, a local social enterprise, ebroNAUTAS, leads guided kayak tours on the Ebro River to share local knowledge on floods and Spanish flood risk management policies (CAPFLO 2017b). After these tours, 93 percent of participants reported a “significant” increase in risk perception and willingness to implement property-level protection. Local NGOs or social enterprises are often trusted community groups that are well-positioned to lead flood mitigation initiatives or to simply build interest in flood issues. Ultimately, governments and homeowners must share responsibility for flood risk management, and public investments in prevention and recovery must be supplemented by homeowners’ investment in self-protection (Box, Thomalla and van den Honert 2013). Effective long-term public engagement and awareness campaigns can help facilitate this risk sharing.

¹ See <https://nationalfloodforum.org.uk/working-together/community-engagement-hub/>.

Works Cited

- Albright, Elizabeth A. and Deserai A. Crow. 2015. "Learning processes, public and stakeholder engagement: Analyzing responses to Colorado's extreme flood events of 2013." *Urban Climate* 14 (1): 79–93.
- Alexander, Meghan, Sally Priest, Ana Paula Micou, Sue Tapsell, Colin Green, Dennis Parker and Stephen Homewood. 2016. "Analysing and evaluating flood risk governance in England: Enhancing societal resilience through comprehensive and aligned flood risk governance." Flood Hazard Research Centre, Middlesex University, STAR-FLOOD Consortium.
- Armas, Luliana and Eugen Avram. 2009. "Perception of flood risk in Danube Delta, Romania." *Natural Hazards* 50 (2): 269–87.
- Beeby, Dean. 2017. "Homeowners ill-informed about flood compensation, poll suggests." CBC, Jan 22. www.cbc.ca/news/politics/flood-insurance-basement-disaster-compensation-goodale-feltmate-1.3941023.
- Box, Pamela, Frank Thomalla and Robin van den Honert. 2013. "Flood risk in Australia: Whose responsibility is it, anyway?" *Water* 5 (4): 1580–97.
- Bradford, R. A., J. J. O'Sullivan, I. M. van der Craats, J. Krywkow, P. Rotko, J. Aaltonen, M. Bonaiuto, S. De Dominicis, K. Waylen and K. Schelfaut. 2012. "Risk perception — issues for flood management in Europe." *Natural Hazards and Earth System Sciences* (12): 2299–309.
- Bradley, Susan. 2017. "Sydney flood victims relive nightmare as water rises again after heavy rain." CBC, May 10. www.cbc.ca/news/canada/nova-scotia/sydney-thanksgiving-flood-water-assistance-basements-1.4108900.
- Canadian Press. 2017. "More flood warnings, evacuation orders for B.C. interior." www.cbc.ca/news/canada/british-columbia/bc-flood-warnings-june-1-1.4142644.
- CAPFLO. 2017a. *Participatory Mechanisms Report for the Dutch Case Study in Itteren and Borgharen: Planning, Implementation and Evaluation of Pilot Actions*. Cerdanyola del Vallès, Spain: Institute of Government and Public Policy.
- . 2017b. *Spanish Case Study Ribera Alra del Ebro: Planning, Implementation and Evaluation of Pilot Actions*. Cerdanyola del Vallès, Spain: Institute of Government and Public Policy.
- CBC. 2017a. "Ottawa and Gatineau flood: a photo timeline." CBC, May 14. [www.cbc.ca/news/canada/ottawa-gatineau-floods-photos-week-1.4110510](http://www.cbc.ca/news/canada/ottawa/gatineau-floods-photos-week-1.4110510).
- . 2017b. "Provincial disaster relief may leave scores wanting following Windsor-Essex flooding." CBC, Aug 30. www.cbc.ca/news/canada/windsor/provincial-disaster-relief-may-leave-scores-wanting-following-windsor-essex-flooding-1.4269113.
- de Moel, H., J. van Alphen and J. C. J. H. Aerts. 2009. "Flood maps in Europe: Methods, availability and use." *Natural Hazards and Earth System Sciences* (9): 289–301.
- European Commission. 2017. "The EU Floods Directive." http://ec.europa.eu/environment/water/flood_risk/implem.htm.
- Fagan, Laurie. 2017. "Ineligible for disaster relief, flooded Ontario cottage owners feeling left out." CBC, May 9. www.cbc.ca/news/canada/ottawa/cottage-owners-ontario-disaster-relief-1.4105469.
- FEMA. 2006. *Flood Map Modernization: Mid-Course Adjustment*. March 30. www.fema.gov/media-library-data/20130726-1541-20490-9920/mm_mca.pdf.
- . 2017. "Map Modernization." www.fema.gov/map-modernization.
- Grand River Conservation Authority. 2017. *Preparing for Floods: A Guide for Residents of New Hamburg*.
- Griffin, Robert J., Zheng Yang, Ellen ter Huurne, Francesca Boerner, Sherry Ortiz and Sharon Dunwoody. 2008. "After the flood: Anger, attribution, and the seeking of information." *Science Communication* 29 (3): 285–315.

- Grothmann, Torsten and Fritz Reusswig. 2006. "People at risk of flooding: Why some residents take precautionary action while others do not." *Natural Hazards* (38): 101–20.
- Hagemeier-Klose, M. and K. Wagner. 2009. "Evaluation of flood hazard maps in print and web mapping services as information tools in flood risk communication." *Natural Hazards and Earth System Sciences* (9): 563–74.
- Hegger, D. L. T., P. P. J. Driessen and M. H. N. Bakker. 2016. *A View on More Resilient Flood Risk Governance: Key Conclusions of the STAR-FLOOD Project*. Utrecht, the Netherlands: STAR-FLOOD Consortium.
- Heitz, Carine, Sandrine Spaeter, Anne-Véronique Auzet and Sandrine Glatron. 2009. "Local stakeholders' perception of muddy flood risk and implications for management approaches: A case study in Alsace (France)." *Land Use Policy* (26): 443–51.
- Kaufmann, M., W. J. van Doorn-Hoekveld, H. K. Gilissen and M. van Rikswijk. 2016. "Analysing and evaluating flood risk governance in the Netherlands: Drowning in safety?" Utrecht, the Netherlands: STAR-FLOOD Consortium.
- Lin, S. Y., D. G. Shaw and M. C. Ho. 2008. "Why are flood and landslide victims less willing to take mitigation measures than the public?" *Natural Hazards* 44 (2): 305–14.
- Merz, B., A. H. Thieken and M. Gocht. 2007. "Flood Risk Mapping at the Local Scale: Concepts and Challenges." In *Flood Risk Management in Europe*, edited by S. Begum, M. J. F. Stive and J. W. Hall, 231–51. Dordrecht, the Netherlands: Springer.
- Mileti, Dennis, S. and Colleen Fitzpatrick. 1992. "The casual sequence of risk communication in the Parkfield Earthquake Prediction Experiment." *Risk Analysis* (12): 393–400.
- MMM Group. 2014. "Flood risk in Canada — moving forward." Institute for Catastrophic Loss Reduction. October 10. www.iclr.org/images/MMM_-_CL_10Oct2014final.pdf.
- Moghal, Zainab and Shawna Peddle. 2016. *At the Front Lines of Flood: How Prepared are Ontario Communities?* Waterloo, ON: Partners for Action.
- Natural Resources Canada and PSC. 2017. *Federal Floodplain Mapping Framework*. Government of Canada.
- OECD. 2016. "The Financial Management of Flood Risk." Paris: OECD. www.oecd.org/daf/fin/insurance/financial-management-of-flood-risk.htm.
- Parker, D. J., Sally Priest and Sue Tapsell. 2009. "Understanding and enhancing the public's behavioural response to flood warning information." *Meteorological Application* (16): 103–14.
- PSC. 2017. "Natural Disaster Mitigation Program (NDMP)." www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/dsstr-prvntn-mtgtn/ndmp/index-en.aspx.
- Scolobig, Anna, B. De Marchi and M. Borga. 2012. "The missing link between flood risk awareness and preparedness from case studies in an Alpine Region." *Natural Hazards* (63): 499–520.
- Seifert, I., W. J. W. Botzen, H. Kriebich and J. C. J. H. Aerts. 2013. "Influence of flood risk characteristics on flood insurance demand: a comparison between Germany and the Netherlands." *Natural Hazards and Earth System Sciences* (13): 1691–705.
- Thaler, Thomas and Meike Levin-Keitel. 2015. "Multi-level stakeholder engagement in flood risk management — a question of roles and power: Lessons from England." *Environmental Science & Policy* 55 (2): 292–301.
- Thieken, Annegret H., Sarah Kienzler, Heidi Kriebich, Christian Kuhlicke, Michael Kunz, Bernhard Mühr, Meike Müller, Antje Otto, Theresia Petrow, Sebastian Pisi and Kai Schröter. 2016. "Review of the flood risk management system in Germany after the major flood in 2013." *Ecology and Society* 21 (2): 51.

Thistlethwaite, Jason, Daniel Henstra, Shawna Peddle and Daniel Scott. 2017. *Canadian Voices on Changing Flood Risk: Findings from a National Survey*. Waterloo, ON: University of Waterloo. https://uwaterloo.ca/partners-for-action/sites/ca.partners-for-action/files/uploads/files/canadian_voices_on_changing_flood_risk_fnl.pdf.

Twigger-Ross, Clare, Paula Orr, Katya Brooks, Rolands Sadauskis, Hugh Deeming, Jane Fielding, Jim Harries, Ruth Johnston, Kashefi Elham, Simon McCarthy, Yvonne Rees and Sue Tapsell. 2015. *Flood Resilience Community Pathfinder Evaluation: Final Evaluation Report*. London, UK: UK Department for Environment, Food & Rural Affairs.

About the Global Economy Program

Addressing limitations in the ways nations tackle shared economic challenges, the Global Economy Program at CIGI strives to inform and guide policy debates through world-leading research and sustained stakeholder engagement.

With experts from academia, national agencies, international institutions and the private sector, the Global Economy Program supports research in the following areas: management of severe sovereign debt crises; central banking and international financial regulation; China's role in the global economy; governance and policies of the Bretton Woods institutions; the Group of Twenty; global, plurilateral and regional trade agreements; and financing sustainable development. Each year, the Global Economy Program hosts, co-hosts and participates in many events worldwide, working with trusted international partners, which allows the program to disseminate policy recommendations to an international audience of policy makers.

Through its research, collaboration and publications, the Global Economy Program informs decision makers, fosters dialogue and debate on policy-relevant ideas and strengthens multilateral responses to the most pressing international governance issues.

About CIGI

We are the Centre for International Governance Innovation: an independent, non-partisan think tank with an objective and uniquely global perspective. Our research, opinions and public voice make a difference in today's world by bringing clarity and innovative thinking to global policy making. By working across disciplines and in partnership with the best peers and experts, we are the benchmark for influential research and trusted analysis.

Our research programs focus on governance of the global economy, global security and politics, and international law in collaboration with a range of strategic partners and support from the Government of Canada, the Government of Ontario, as well as founder Jim Balsillie.

À propos du CIGI

Au Centre pour l'innovation dans la gouvernance internationale (CIGI), nous formons un groupe de réflexion indépendant et non partisan qui formule des points de vue objectifs dont la portée est notamment mondiale. Nos recherches, nos avis et l'opinion publique ont des effets réels sur le monde d'aujourd'hui en apportant autant de la clarté qu'une réflexion novatrice dans l'élaboration des politiques à l'échelle internationale. En raison des travaux accomplis en collaboration et en partenariat avec des pairs et des spécialistes interdisciplinaires des plus compétents, nous sommes devenus une référence grâce à l'influence de nos recherches et à la fiabilité de nos analyses.

Nos programmes de recherche ont trait à la gouvernance dans les domaines suivants : l'économie mondiale, la sécurité et les politiques mondiales, et le droit international, et nous les exécutons avec la collaboration de nombreux partenaires stratégiques et le soutien des gouvernements du Canada et de l'Ontario ainsi que du fondateur du CIGI, Jim Balsillie.

CIGI Masthead

Executive

President **Rohinton P. Medhora**

Director of Finance **Shelley Boettger**

Director of the International Law Research Program **Oonagh Fitzgerald**

Director of the Global Security & Politics Program **Fen Osler Hampson**

Director of Human Resources **Susan Hirst**

Interim Director of the Global Economy Program **Paul Jenkins**

Chief Operating Officer and General Counsel **Aaron Shull**

Director of Communications and Digital Media **Spencer Tripp**

Publications

Publisher **Carol Bonnett**

Senior Publications Editor **Jennifer Goyder**

Publications Editor **Susan Bubak**

Publications Editor **Patricia Holmes**

Publications Editor **Nicole Langlois**

Publications Editor **Lynn Schellenberg**

Graphic Designer **Melodie Wakefield**

For publications enquiries, please contact publications@cigionline.org.

Communications

For media enquiries, please contact communications@cigionline.org.

Copyright © 2017 by the Centre for International Governance Innovation

The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Centre for International Governance Innovation or its Board of Directors.



This work is licensed under a Creative Commons Attribution – Non-commercial – No Derivatives License. To view this license, visit (www.creativecommons.org/licenses/by-nc-nd/3.0/). For re-use or distribution, please include this copyright notice.

Printed in Canada on paper containing 10% post-consumer fibre and certified by the Forest Stewardship Council® and the Sustainable Forestry Initiative.

Centre for International Governance Innovation and CIGI are registered trademarks.

Centre for International Governance Innovation

67 Erb Street West
Waterloo, ON, Canada N2L 6C2
www.cigionline.org

