



CANADA'S CLIMATE CHANGE ADAPTATION PLATFORM

Equipping Canadians for a Changing Climate

Annual Report for April 2018 to March 2019



Plenary Members (2018/2019)

- **Plenary Chair** – Natural Resources Canada, Lands and Minerals Sector; Chris Jennings
- **Plenary Co-chair May 2018** – Chartered Professional Accountants of Canada; Gord Beal
- **Plenary Co-chair November 2018** – Government of Manitoba; Neil Cunningham

Territorial and Provincial Governments

- British Columbia – Ministry of Environment Climate Action Secretariat; Claudia Trudeau
- Manitoba – Manitoba Conservation and Water Stewardship; Neil Cunningham
- New Brunswick – New Brunswick Environment and Local Government; Darwin Curtis
- Newfoundland and Labrador – Office of Climate Change and Energy Efficiency; Jackie Janes
- Northwest Territories – Environment and Natural Resources; Lisa Dyer
- Nova Scotia – Nova Scotia Environment; Jason Hollet
- Nunavut – Climate Change Secretariat; Zoe Martos
- Ontario – Ministry of Environment and Climate Change; Karen Moore
- Prince Edward Island – Department of Environment, Labour and Justice; Todd Dupuis
- Saskatchewan – Ministry of Environment; Lynn Kelley
- Yukon – Climate Change Secretariat; Rebecca World | Kirsten Burrows

Federal Government Departments and Agencies

- Agriculture and Agri-Food Canada; Alexandre Lefebvre
- Crown-Indigenous Relations and Northern Affairs Canada; Anita Walker
- Environment and Climate Change Canada; Laniel Bateman
- Environment and Climate Change Canada, Canada Centre for Climate Services; Lo Cheng
- Fisheries and Oceans Canada; Keith Lennon
- Health Canada; Carolyn Tateishi
- Infrastructure Canada; Robert Judge
- Natural Resources Canada, Energy Sector; Jason Randall
- Natural Resources Canada, Canadian Forest Service; Winn Hays-Byl
- Parks Canada; Gilles Seutin
- Public Health Agency of Canada; Christina Lee-Fuller
- Public Safety Canada; Arjun Vinodrai
- Standards Council of Canada; Marla Desat
- Transport Canada; Maxine Bilodeau

National Indigenous Organizations

- Assembly of First Nations; Tonio Sadik
- Inuit Tapiriit Kanatami; Elizabeth Ford
- Métis National Council; John Weinstein

Private Sector and Not-for-profit Organizations

- Chartered Professional Accountants of Canada; Gord Beal
- Canadian Electricity Association; Devin McCarthy

- Engineers Canada; David Lapp
- Federation of Canadian Municipalities; Kate Fleming
- Forest Products Association of Canada; Robert Laroque
- Insurance Bureau of Canada; David McGown
- Institute for Catastrophic Loss Reduction; Paul Kovacs
- Mining Association of Canada; Brendan Marshall
- Ouranos; Alain Bourque
- University of Waterloo; Jean Andrey

Observers

- Québec - Ministère du développement durable de l'environnement et des parcs; Catherine Gauthier

Adaptation Platform Secretariat (Natural Resources Canada)

- Elizabeth Atkinson | Ericha Moores

For more information or to contact individual members please email: adaptation@nrca.gc.ca

Images on the front cover in respective order:

- CBC/Darryl Dyck, *British Columbia wildfires*, CBC News, 28 November 2018.
- PEI Coastal Property Guide 2018.

Taking action to adapt to current and future climate impacts will help protect Canadians from climate change risks, build resilience, reduce costs, and ensure that society thrives in a changing climate. Developing adaptation expertise and technology can further contribute to clean growth by creating jobs and spurring innovation. Adaptation is a long-term challenge, and it requires ongoing commitment to action.

Government of Canada (2016) [Pan-Canadian Framework on Clean Growth and Climate Change](#).

Canada's Climate Change Adaptation Platform

Table of Contents

1. The Adaptation Platform	1
2. Message from the Chair.....	3
3. Equipping Canadians for a Changing Climate: 2018-2019 Highlights.....	4
3.1 Plenary	4
3.2 Climate Adaptation Leaders Forum: Finance and Investment	6
3.3 Working Groups	7
<i>Biodiversity Adaptation.....</i>	8
<i>Climate Services</i>	8
<i>Coastal Management</i>	9
<i>Economics</i>	10
<i>Energy</i>	10
<i>Forestry.....</i>	10
<i>Infrastructure and Buildings.....</i>	11
<i>Mining.....</i>	12
4. Other Activities	13
4.1 Canada in a Changing Climate	13
4.2 Building Regional Adaptive Capacity and Expertise.....	14
Annexes.....	15

1. The Adaptation Platform

The Adaptation Platform brings together representatives from national industry, Indigenous, and professional organizations, federal, provincial and territorial governments, and researchers to tackle shared climate change adaptation priorities. Collaboration between the public and private sectors, and across jurisdictions and disciplines, is essential to address the complex and crosscutting issue of climate change adaptation.

Platform participants are both the users and producers of adaptation knowledge and tools. As a result, the Platform's work is demand-driven, facilitating the analysis and implementation of adaptation action, and directly responding to the needs of decision-makers in Canada's public and private sectors. By providing the structure to pool financial resources, knowledge, and people, the Adaptation Platform works to create new information and tools for adaptation and get these products to the appropriate users.

Canada's Adaptation Platform is structured around several components: a plenary body, an engagement forum, a series of subject-matter specific working groups, a secretariat and a broad network of individuals engaged in delivering adaptation actions. In addition, the Regional Adaptation Collaboratives (including the Pan-Territorial Adaptation Partnership) are active across the country performing outreach, and enhancing regional dissemination of Platform results.

Natural Resources Canada chairs the Adaptation Platform, and has committed ongoing resources to support the overall Platform, selected Working Group activities, and to provide the secretariat function.

Plenary is a biannual meeting with membership comprised of senior-level representatives that are adaptation champions (Annex I). The main objective of Plenary is to identify critical and emerging adaptation priorities in Canada and to support collaborative efforts in focused areas of work. Plenary members also generate support for adaptation action and disseminate adaptation knowledge within their organizations and extended networks.

Working Groups focus efforts on shared adaptation priorities within their particular subject matter area. Plenary members can nominate participants from their organizations and networks that bring the resources (time, money, expertise) needed to develop and carry out working group activities. Additional members are recruited by the Working Group chairs or co-chairs.

Administrative duties are carried out by the secretariat at Natural Resources Canada. Tasks include: supporting Plenary; managing a shared workspace; facilitating interactions amongst the working group co-chairs; running a webinar series; and producing an annual report and regular newsletters.

The Adaptation Platform Workspace is a virtual place for Plenary Members and Working Group participants to access information, communicate, and collaborate in the planning, development and review of knowledge products. The sharing site is not meant to replace face-to-face meetings for Plenary members, rather to complement them. In 2018-2019, notable actions were:

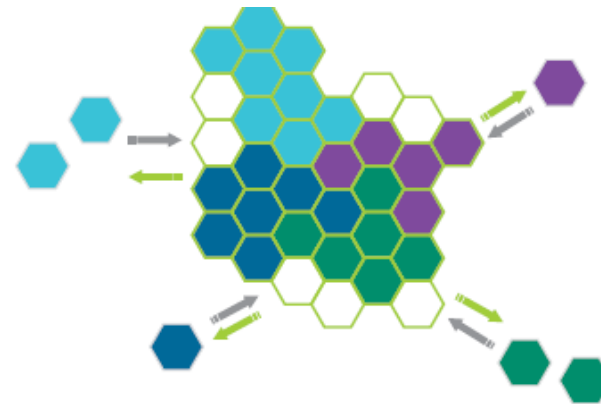
- 438 members, an increase of 81;
- The most active sub-space was Canada in a Changing Climate, followed by Energy, followed by Plenary;
- 927 files were added, as well as 18 blogs and 24 calendar items; and,

- There were 30.6K activity items, including views, comments, document creations and edits, and downloads.

Newsletters were circulated to over 1350 Platform members in the Spring and Winter of 2018/2019.

Webinars were recorded and are available; [Spring 2018](#) and [Fall 2018-Spring 2019](#).

The Adaptation Platform is successfully connecting the resources, people and ideas needed for Canada's regions and industries to understand the effects of a changing climate and adapt their operations accordingly. For more information on the Adaptation Platform, please visit the [Natural Resources Canada](#) website.



2. Message from the Chair

The Climate Change Impacts and Adaptation Division – the team that provides the secretariat for Canada’s Climate Change Adaptation Platform and supports our range of activities – turned twenty this year. We took time to celebrate the work we have done, often in collaboration with members of this Platform, to help Canadians understand and respond to the many ways a changing climate affects our lives. It took the work of twenty years and many very committed and talented people – an entire adaptation community that includes the members of this Platform - to raise the profile of the issue and our capacity to address it to the point we are at now.

And that point feels like a crossroads.

The recently-released *Canada’s Changing Climate Report* confirms that the climate is changing faster than we anticipated, and that we need to accelerate action to adapt to be both resilient and competitive in the face of climate change impacts. The current community of adaptation experts and the capacity of organizations focussed on adaptation both remain small when measured against the need to accelerate the pace of action. Similarly, capacity-building initiatives like the Building Regional Adaptation Capacity and Expertise program both help to address the problem and reveal how much farther we need to go. We need the community of actors to grow if we want to turn the knowledge and expertise that exists into more rapid action. New players like the Canadian Climate and Clean Growth Institute will help that cause, but there is still more to do.

We may look back on this past year and see it as a transformative in that light. One of the most notable storylines of the past year was Canada’s response to the recommendations of the Task Force on Climate Related Financial Disclosure. We’ve seen the launch of the

Expert Panel on Sustainable Finance, discussions at G7 meetings under Canada’s leadership, and recently the Bank of Canada stated that they are taking climate risks into account in the financial system review process. The potential impact could be enormous; it could help change behaviour in the private sector by pricing the risks of a changing climate, and help frame adaptation as a broader question of what we need to do now to succeed – economically, socially, culturally and environmentally – in a changing climate.

The advantage of being at a crossroads is that every direction you turn is a way forward. As Canadians learn more about how irreversible climate warming affects every aspect of their lives, the demand for adaptation solutions is only going to grow. And Canadians are increasingly aware of the climate’s impact on their experience. In a 2018 NRCan survey of decision-makers, 87% of natural resource industry respondents and 93% of community respondents said that climate change was either happening right now or would happen in the foreseeable future. Additionally, 25% of business respondents and 51% of community respondents said that climate change is having an impact on their organization right now, and a further 46% of respondents in business and 43% in communities said that it is not having an impact on their organization now but it is possible in the future. This issue is now at a point where, to borrow from the world of clean tech innovation, we need our collaborative efforts to concentrate on how we turn from proof of concept to ramping up our efforts to address the impacts we experience now and prepare for those we can see on the horizon. It is an exciting challenge, and I look forward to working with the members of this Platform – current and future – to meet it.

Chris Jennings, Director, Climate Change Impacts and Adaptation Division, Natural Resources Canada

3. Equipping Canadians for a Changing Climate: 2018-2019 Highlights

3.1 Plenary

The Plenary is a network of networks. Direct membership includes all provincial and territorial governments, multiple federal government departments, professional and industry associations, and national Indigenous and research organizations (Annex 1: Plenary Membership). The greater reach includes 250 organizations, 217,000 accountants, and 290,000 engineers across Canada. This feature is a critical component of the Adaptation Platform communication strategy. Communication priorities include increasing dissemination to targeted audiences, enhancing engagement at senior levels within members' organizations, and making greater use of extended networks to promote inclusion of adaptation as part of day-to-day management practices.

The Adaptation Platform Plenary held two engaging meetings throughout 2018. Discussions continued to provide insight on the implementation of adaptation in Canada, and to leverage the diverse resources of the group. As of May 2018, the Climate Change Impacts and Adaptation Division at NRCan has implemented a new approach. Plenary now features in-depth sessions that focus on emerging areas of adaptation and implementation to prepare for the next generation of adaptation. These deep dives encourage a holistic approach to identify opportunities, explore new collaborations, and enhance engagement on more strategic level.

Spring 2018 Meeting

The spring 2018 meeting was held on Tuesday, May 8 and Wednesday, May 9 at Canada's Centre for Geography and Exploration at the Royal Canadian Geographic Society. There were 65 participants, with a total of 35 members, 12 invited speakers,

and 14 observers. The agenda featured several deep dives, to be reviewed.

Finance and Investment

The first deep dive focused on the finance and investment community with perspectives from asset managers and bond ratings services. Each panelist addressed the increasing pressure that they are experiencing from asset owners and regulators to incorporate climate change considerations into risk management, governance processes, and internal controls. Recent interest in considering climate change in investments and financial decisions has increased greatly over the past five years as overall awareness has grown. If the momentum is to continue, it is important to build awareness tools and have consistent data across all jurisdictions.



Spring 2018 Plenary Members at Canada's Centre for Geography and Exploration.

Building Capacity for Adaptation Action

The session specifically addressed the evident gap in the uptake and application of adaptation knowledge and tools and the continued need to build upon learning and training opportunities. At Plenary, members noted the importance to continue this conversation in order to define capacity and to better understand the present barriers to building capacity within organizations and communities.

Role of Associations

The second day featured an interactive session to explore the role of associations within the Adaptation Platform. There was a 3-minute-1-slide challenge, followed by a knowledge café session that featured four areas of collaboration: capacity building, networking, knowledge resources, and engagement. A key message iterated throughout the session recognized that while knowledge gaps persist, it is important to evolve and adapt existing resources and tools.

Fall 2018 Meeting

The fall 2018 meeting was Tuesday, November 27 and Wednesday, November 28 in Winnipeg, Manitoba. There were 55 participants, with a total of 29 member representatives, 9 invited speakers, and 15 observers.



Elder Dave Courchene delivered the Opening and Closing remarks at Plenary (courtesy of Ian Mauro)

In addition to regular Plenary members, Elder Dave Courchene, founder of the Turtle Lodge International Centre for Indigenous Education and Wellness, was invited to conduct the opening and closing ceremony for Plenary. He chose to stay and participate in the two days of discussion, joining Plenary members around the table. In

opening and closing remarks, Elder Courchene noted the prevalence of women's voices at the Plenary table and the significance that this has with Indigenous culture because of the relationship that women have with the land. He also underscored the importance of sharing Indigenous identity and the richness of Indigenous knowledge, messages, and values within the climate adaptation discourse.

Building upon the spring 2018 Plenary, the agenda featured several deep dives that further focused on potential levers in finance and investment systems that connect to adaptation, explored technologies for adaptation, and identified emerging challenges and opportunities to enhance capacity. The deep dives intersected with one another further demonstrating the need for holistic approaches to adaptation.

Technologies for Adaptation

Intended to introduce and explore areas of technology in support of climate change adaptation, the session featured a panel discussion with representatives from the federal government and from organizations utilizing technologies to accelerate adaptation. Discussion addressed two novel frontiers: the use of technology in support of natural infrastructure. Both intersect and can be used concurrently. For example, using technologies for measurement and monitoring in order to better integrate natural infrastructure responses to climate risks.

Building Momentum on Adaptation Capacity

The capacity session at the fall 2018 Plenary revisited the distinction between mainstreaming and creating an adaptation field. Dr. Susanne Moser, Director and Primary Researcher at Susanne Moser Foundation, and a leading expert in the field of adaptation, joined Plenary via teleconference to present discuss [*Rising to the Challenge, Together*](#). Plenary members were highly engaged with Dr. Moser's presentation and discussion focused on how to incentivize and

advance a more transformational approach. Following Dr. Moser's presentation there was a panel discussion of Plenary members that discussed Canadian approaches by providing provincial examples of projects under NRCan's Building Regional Adaptation Capacity and Expertise (BRACE, page 13).

Finance and Investment

In preparation for the Climate Adaptation Leaders Forum and building upon the spring deep-dive, the finance and investment session continued to identify financial levers that connect to adaptation to effectively mainstream adaptation and catalyze action towards a low-carbon, climate-resilient economy. The session featured a presentation of the Environment and Climate Change Canada (ECCC) Expert Panel on Sustainable Finance by Andrew Chisholm, panel member. The presentation reviewed findings from their interim report and had a strong focus on the physical risks. Growing a climate-resilient economy is critical because businesses and jurisdictions seeking to attract investment will be more competitive when they can demonstrate how they have taken climate change vulnerabilities into account, as well as what they are doing to address the risks that they pose.

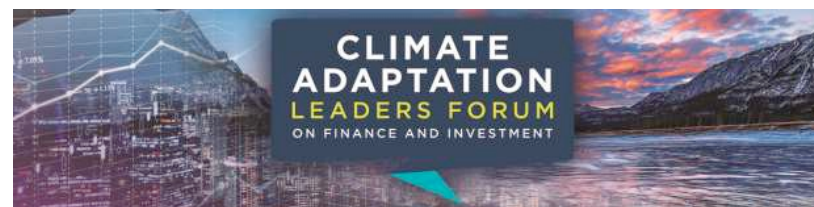
Throughout the two-day meeting, the synergies between technologies for adaptation, emerging export markets, strengthening Canadian competitiveness, and increasing capacity through mainstreaming and training continued to emerge – identifying new areas of adaptation to further explore through Plenary and the Climate Adaptation Leaders Forum.

3.2 The Climate Adaptation Leaders Forum

After six years of advancing adaptation through multi-jurisdictional, multi-stakeholder coordination, Canada's Adaptation Platform is re-designing to enhance uptake and increase widespread adaptation action. Through discussions with industry and professional

associations at Plenary, it became evident that there was a need to elevate the conversation on adaptation. Complex interlinked systems, multiple priorities, the lack of internal structure necessary to normalize adaptation, and an absence of external behavioural signals combine to inhibit or fragment adaptation action. Under these circumstances, increasing knowledge and its availability does not necessarily lead to the adaptation action that is required. However, rapid adaptation uptake and resilience building will occur when organizations embrace the challenges of changing climate as integral to daily operation and planning. The Leaders Forum mechanism re-frames adaptation as a driver of innovation through an engagement forum that targets executive leadership who have the power to drive institutional change within their organization. The theme of the Forum will change annually, and the invitees will reflect those themes.

The Pilot Climate Adaptation Leaders Forum on Finance and Investment



The pilot Leaders Forum developed and delivered in partnership between Natural Resources Canada (NRCan), Environment and Climate Change Canada (ECCC), the Insurance Bureau of Canada and the Chartered Professional Accountants of Canada, was held on January 23, 2019. It was co-chaired by Deputy Minister Christyne Tremblay (NRCan) and Deputy Minister Stephen Lucas (ECCC). The Forum convened 37 senior-level executives from across the finance and investment community to discuss the role of the private sector in growing a climate-resilient economy and catalyzing action and

investments in climate adaptation. Participants included representatives from four of Canada's "Big 8" pension investment funds that manage \$1.25 trillion in retirement savings for Canadians.



Co-chairs Deputy Minister Stephen Lucas and Deputy Minister Christyne Tremblay, along with several Leaders Forum participants.

The forum focused on the physical impacts of climate change and finance and investment systems, which includes property damage, disruption to operations and/or supply and distribution channels, increased insurance claims or decrease in the availability, or loss, of coverage. It was the first step towards engaging public and private sectors in a collaborative discussion on the importance of private finance in climate change adaptation. The panel at the Forum presented diverse perspectives across the finance and investment community, and consisted of:

- Charles Brindamour, CEO of Intact Financial Corporation,
- James Hempstead, Managing Director of Moody's Global Project & Infrastructure Finance Group, and
- Kim Thomassin, Executive Vice President of Caisse de dépôt et placement du Québec.

In connection to the efforts of the Expert Panel on Sustainable Finance, panel member Andrew Chisholm was also present to review

the findings of the interim report with a strong focus on the physical risks. The Forum was facilitated by Céline Bak, President of Analytica Advisors.

Key themes included: expanding the narrative to include opportunities; strengthening data and training to support climate-related financial disclosure; increasing youth engagement; and increasing collaboration between public and private sectors at all levels (Annex II).

A key output of the Forum was a directional statement (Annex III) that acknowledged the importance of increasing private sector financial flows toward climate adaptation efforts. The statement also highlights climate adaptation as an innovation space that could increase competitive advantage for businesses and jurisdictions seeking investment.

Additional outcomes of the pilot Leaders Forum feeds back to Plenary with practical next steps in how to support finance and investment systems in creating a resilient economy. This allows for engagement with the provinces and their jurisdictions with respect to regulated financial communities.

3.3 Working Groups

Products that put the information and tools in the hands of the policy-makers and practitioners implementing climate change adaptation are typically produced under the guidance of the Working Groups. Like Plenary, Working Groups are a network of networks. Typically co-chaired by members from different organizations, Working Groups bring together people with expertise and common interest in specific issues or sectors. Participants collaborate to define, and then work towards achieving, their climate change adaptation objectives. Terms of reference are developed for each Working Group and a program of work is developed and brought to Plenary. The program of work is revisited on a timeline established

by each Working Group, but often follows government funding cycles. Many of the Working Groups develop a State of Play document that serves as a reference tool when identifying and discussing initiatives to be undertaken.

Members of a Working Group may contribute by providing funding, expertise and information from their organizations; writing and reviewing documents; acting as advisory committee members on projects; or hosting meetings. Working Groups meet primarily by teleconference, and some carry out work using the online workspace. Working Group activities are carried out by member organizations as well as through calls for proposals and contracted work. Priorities for funding would be identified based on the mandate of the potential funder, which could include any Plenary member organizations.

Biodiversity Adaptation

Co-chairs:

Elizabeth Nelson, Parks Canada
Position available /vacant

The Biodiversity Adaptation Working Group met eight times in 2018-19. Following completion of the State of Play Report in the spring of 2018, potential areas of work were identified and explored. Two areas of work were identified as priorities:

- Promoting natural infrastructure – how protecting, restoring, or enhancing natural infrastructure can be a win-win for biodiversity and people.
- Communicating climate change – shareable taglines and messaging about climate change and biodiversity loss.

Following discussions and knowledge sharing on the two priority areas of work, it was decided that initial work should focus on promoting natural infrastructure. A series of presentations and workshops are being planned to advance dialogue on the biodiversity

and adaptation components of current, proposed, and future natural infrastructure projects, with an emphasis on the five themes identified in the State of Play Report: Science; Partnerships; Communications; Policy, Programs and Funding; and Indigenous Leadership.

Climate Services

Co-chairs:

Lo Cheng, Environment and Climate Change Canada
David Huard, Ouranos

Since its establishment in the fall of 2017, the Climate Services Working Group (CSWG) has gathered a wide range of stakeholders across regions and sectors to address common issues and needs related to the ongoing delivery of climate services for adaptation decision-making and planning in Canada. The CSWG has two key short-term areas of activity and sub-groups to advance work: (1) monitoring and (2) training.

Monitoring Sub-group co-leads:

Ted Weick, Ministry of Environment and Climate Change Strategy, Province of BC
Jamie Smith, Environment and Climate Change Canada

The scope of the monitoring Sub-group is to provide Canadians with improved, standardized, and accessible weather and climate data, and metadata to support their planning and decision-making. Work under the sub-group continues to support the development of standardized guidelines for transmission, collection and grading of weather and climate data, as well as the placement and maintenance of monitoring stations. The Sub-group is building on provincial experience in British Columbia to develop ECCC's Collaborative Network Program where network owners and operators from

multiple jurisdictions participate in and identify opportunities to jointly operate and interweave networks. The Sub-group also initiated a contract to develop an inventory of monitoring networks and stations of all kinds (e.g. industry, community groups). The inventory will offer clarity on the current status of network offerings across the country and identify monitoring intent, larger scale gaps, and needs in these networks.

Training Sub-group co-leads:

Stephanie Austin, Environment and Climate Change Canada

Isabelle Charron, Ouranos

The scope of the Training Sub-group is training Canadians about what climate information is available and how to use it to guide decision-making. After developing the plan of activities, the Training Sub-Group prepared a framework defining different training users and training needs as a basis for future activities. In early 2019 the Training Sub-Group began work on beginner-level training materials on climate science and climate information. The Training Sub-Group also initiated a contract to identify existing climate services-related training in Canada in order to explore gaps, opportunities for collaboration and to inform future activities.

The CSWG will continue to support the Sub-groups' initiatives, explore areas of collaboration with other working groups under the Adaptation Platform, and consider other activities for its Program of Work to be carried out over the next few years.

Coastal Management

Co-chairs:

Mary-Ann Wilson, Natural Resources Canada

Erin Taylor, Prince Edward Island Department of Communities, Land and Environment

In August 2017, NRCan solicited proposals for cost-shared projects, with \$2 million dedicated to addressing coastal management priorities, including:

- Alternative and innovative options to hard protection infrastructure solutions;
- Expanded or innovative policy instruments; and,
- Integrated adaptation initiatives.

During 2018/19, NRCan approved eight projects, the majority of which fall under the theme of alternative and innovative options to hard protection infrastructure solutions, with a specific focus on demonstrating and building capacity for the implementation of natural infrastructure. Projects are taking place on the Great Lakes, the Atlantic and Pacific coasts, include international collaboration with partners from Massachusetts to determine effective policy instruments, and a Nova Scotia case study as part of an OECD [report](#) that compares countries' approaches to coastal adaptation.

The Coastal Management Working Group (CMWG) was well represented at the 2018 Coastal Zone Canada Conference in St. John's, Newfoundland. A number of Working Group members and project partners presented on their work and gained valuable feedback from Canada's largest gathering of coastal practitioners. The conference also hosted the launch of the [Cold Regions Living Shorelines Community of Practice \(CRLS CoP\)](#), an initiative to encourage knowledge-exchange on living shoreline ideas and principles, a priority area for the CMWG.

Work in the year ahead will focus on maintaining a partnership with the Geological Survey of Canada to support outreach and communication on accessible sea level rise and coastal sensitivity information, and engagement to increase the use of natural infrastructure as a coastal adaptation measure.

Economics

Co-chair:

Pam Kertland, Natural Resources Canada

The Economics Working Group focused on briefings from the leaders and teams of eight projects that received funding support from NRCan. Seven of the projects focus on cost-benefits analysis, often with water resources and flooding as a focus. The eighth project is led by CPA Canada and focuses on Climate Change Disclosures and Decision-Making. The briefings explained the goals and methodology that will be used by each project and provided an opportunity for working group members to ask questions. The leaders from all of the economics projects and members of related working groups were invited to join the meetings to build awareness about the projects and opportunities to connect work in progress.

Energy

Co-chair:

Radha Subramani, Natural Resources Canada

The Energy Working Group (EWG) welcomed a new chair from Natural Resources Canada. The group also focused efforts on engaging the oil and gas sector over the past year. Although the EWG's mandate is to advance climate change adaptation in the energy sector, it is noted that there is currently no representation from the oil and gas sector. In September 2018, the EWG was invited to present at the Oil Sands Trade Show and Conference in Fort McMurray, Alberta. Members of the working group presented "Climate Change and its Impacts to the Oil Sands." In addition, there was a discussion paper developed that highlighted climate change risks and opportunities to the oil and gas sector in Canada.

Work in the year ahead will continue to explore engagement with the oil and gas sector with targeted engagement plans to increase membership and engagement from the oil and gas sector in the EWG.

Forestry

Co-chairs:

Winnifred Hays-Byl, Canadian Forest Service

Vincent Roy, Canadian Forest Service

The Forestry Adaptation Working Group (FAWG) renewed (as members retired) and further increased its membership with representatives from academia and other government. The FAWG currently meets on a monthly basis to share updates on adaptation related projects and lessons learned on adaptation activities. As part of the monthly meetings, members provide round table updates from their respective jurisdictions, including standing items on Knowledge Assessment, Knowledge Exchange, and Forest Mitigation (from the National Forest Sinks Committee). In addition, several presentations have featured crosscutting issues with relevance to the forest sector.

FAWG presentations in 2018 included

- Developing a Forest Climate Change 10-year Research Agenda
Tony Lempriere, NRCan-Canadian Forest Service (February 2018)
- Evolution of Climate Change and Extreme Weather Standards in Canada
Dr. Blair Feltmate, Intact Centre on Climate Adaptation, University of Waterloo (April 2018)
- Canadian Centre for Climate Services – Partnership and Engagement
Erik Sparling, Partnership and Engagement, Environment and Climate Change Canada (May 2018)

- Rapid assessment protocol for assessing carbon in forest wetlands
Dr. Mark Johnston, Saskatchewan Research Council (September 2018)
- State of Climate Change Extreme Weather Preparedness in Canada: Are We Adapting Fast Enough, and If Not, What Must be Done?
Dr. Blair Feltmate, Head, Intact Centre on Climate Adaptation, University of Waterloo (December 2018)

In January 2018, the working group reviewed and updated their Terms of Reference, and discussed the agenda and timing of meetings to meet members' needs. In February, members reviewed and updated their Program of Work, and discussed adaptation information needs. Members collectively prioritized a review of the current use of adaptation tools under existing forest policy. FAWG members indicated a strong desire to learn from each other, especially where they share common climate data and experience similar vulnerabilities to climate change impacts.

In response to this need, NRCan-CFS partnered with Saskatchewan Research Council to lead this work, building on the State of Play Report, produced in 2017. The project explores the provincial and territorial climate change frameworks and policies that enable adaptation activities across Canada. As well, the project examines the development of different adaptation tools, highlighting those that are more widely used, and noting where technology transfer could support their application in other jurisdictions. The results from this work are expected to inform future adaptation actions and the use of adaptation tools, and highlight opportunities to build capacity and resilience in forests and communities. The project team is aiming to circulate a summary report of the findings by April 2019, with

additional products available at a later date including an online report and presentation.

Over the past year, the FAWG has seen new provincial and territorial climate change and adaptation action plans begin to develop and come into effect. There are many efforts across the country to increase capacity for adaptation action, with many collaboration and knowledge exchange opportunities. To harness the capacity within the FAWG, we will be looking to begin more targeted projects as a working group such as keeping the State of Play updated, discussing national and regional adaptation priorities, and working closer with our mitigation counterparts.

In January 2019, the FAWG again reviewed their Terms of Reference, given changes in membership. The working group agreed to participate in a survey to solicit information on their priorities and suggestions on meeting logistics and content to ensure upcoming meetings continue to be relevant and useful to members. The survey will be administered in February 2019, and survey results will be shared with the FAWG members by April 2019.

Infrastructure and Buildings

Co-chairs:

David Lapp, Engineers Canada

Paul Kovacs/Dan Sandink, Institute for Catastrophic Loss Reduction

The Infrastructure and Buildings Working Group's (IBWG) Program of Work, updated in 2018, and 2017 State of Play report (www.ibwgsop.org) continue to emphasize the IBWG's objectives of building capacity for buildings and infrastructure adaptation, outreach and information dissemination, and building evidence for adaptation measures.

As an unfunded WG, the IBWG continues to focus on the dissemination of information on adaptation initiatives, and the creation of opportunities for adaptation project partnerships. Over the past year, the IBWG has received presentations from around 15 external and internal presenters that focus on progressive national adaptation programs and local adaptation initiatives. The IBWG is currently comprised of approximately 30 members representing private industry, federal and provincial government agencies, non-government and academic agencies working to adapt Canada’s infrastructure and buildings to the impacts of climate change and extreme natural events.

IBWG participants continue to pursue numerous infrastructure and buildings related projects. For example, IBWG members have been involved in development of multiple projects concerning adaptation of infrastructure and buildings to the impacts of climate change. IBWG members have been working with National Research Council of Canada to develop guidance documents for basement flood and wildland urban interface fire risk reduction, as well as the Standards Council of Canada on projects concerning high wind risk reduction for buildings, construction of municipal and private sanitary sewer systems to limit inflow/infiltration (excess water that enters sanitary systems and substantially increases lifecycle costs and reducing infrastructure lifespan), and



development of guidance on collection of structure loss data following wildfire disaster events.

An example output is the Increasing High Wind Safety for Canadian Homes: Foundational Document on Wind Safety for Low-Rise Residential and Small Buildings that was in collaboration with the Institute for Catastrophic Loss Reduction, Western University, and the Council of Canada.

Mining

Chair:

Pam Kertland, Natural Resources Canada

In August 2017, NRCan issued a call for proposals for cost-shared projects that addressed topics in the Mining Working Group’s work program including:

- Building awareness and capacity to address climate change risks and adaptation;
- Canadian and international “best” climate change adaptation practices in mining; and,
- Risk assessment on existing orphaned or abandoned mines.

Five projects, with a total investment of \$2.1M were approved, focusing on best practices for the mining sector and assessing climate change risks to orphaned and abandoned mines. The projects focus on a number of geographically diverse locations across Canada, including remote, northern, and coastal regions and include projects partners from industry, government, and academia.

To increase awareness of adaptation and build capacity, the Working Group engaged the Canadian Minerals and Metals Plan Secretariat on adaptation priorities throughout the development of the Canadian

Minerals and Metals Plan. The Plan was launched at the Prospectors & Developers Association of Canada (PDAC) conference on March 03, 2019 and includes climate change adaptation as a key action.

Work in the year ahead will focus on leveraging the projects' results to inform decision-making and continuing to support adaptation priorities under the Canadian Minerals and Metals Plan.

4. Other Adaptation Activities

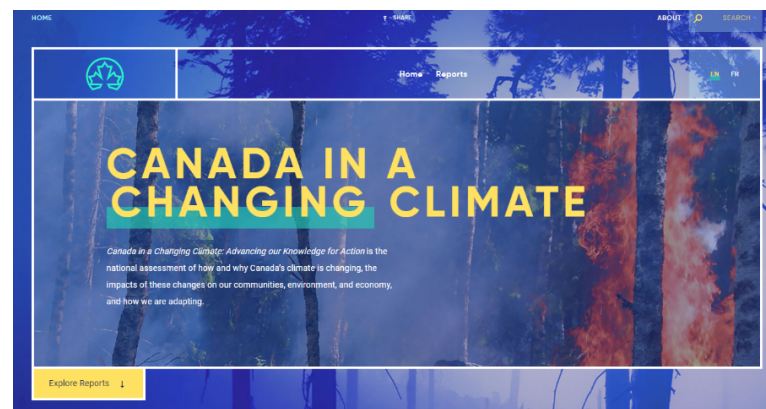
4.1 Canada in a Changing Climate: Advancing our Knowledge to Action

It was a productive year for the Assessment process, [Canada in a Changing Climate: Advancing our Knowledge for Action](#). Much was accomplished and learned, as new assessment ideas and approaches were implemented. Contributions and support from the strong team of advisory committee members and coordinating lead authors were vital to this year's successes, which include:

- Finalization of content for **Canada's Changing Climate Report (CCCR)**. As the first product of the assessment process, this report provides a climate-science foundation for subsequent reports. It documents observed and projected changes in Canada's climate, for variables such as temperature, precipitation, sea level and permafrost.
- Development of a **digital platform** on which all reports will be presented. This visually appealing, dynamic site will help the reports reach new and broader audiences, and allow for interactive images and enhanced linkages between chapters and reports.
- Writing of First Order Drafts for the **Regional Perspectives and National Issues** volumes. These drafts follow a common template, structured around key messages. Each chapter team

also engaged within their region or sector to inform their drafts, through for example, surveys, workshops and conversations.

- Strong engagement from the public on the **assessment website**, with over 150 questions submitted to inform our FAQs and 160 people registering as chapter reviewers.
- **Engagement of students** through a pilot project with the University of Waterloo. Through this initiative, 5 students worked with a Coordinating Lead Author to draft chapter content and participated in a full-day meeting in Ottawa.
- Excellent discussion and results at a **face-to-face meeting** of the full assessment team in October 2018, where decisions were made on key messages, chapter format and engagement activities.



Screenshot of the Canada in a Changing Climate Website.

Improving the incorporation of Indigenous knowledge systems within the national assessment reports is one goal of this assessment process. To this end, most of the chapter leads of the Regional Perspectives and National Issues volumes indicated that Indigenous knowledge informed their draft content. In addition, a new report was added to the Assessment process, which will focus on Indigenous resilience and climate change. This report has an estimated

completion date of early 2021, which will allow it to synthesize results from the other reports, as well as integrate additional content.

4.2 Building Regional Adaptive Capacity and Expertise

The Building Regional Adaptation Capacity and Expertise (BRACE) Program seeks to accelerate action to adapt to climate change by improving the capacity of organizations, professionals, communities and businesses to include climate change impacts in their plans and decisions. BRACE was allocated \$18M over five years (2017-2022) under the Pan-Canadian Framework on Clean Growth and Climate Change. It builds on CCIAD's climate change impacts and adaptation programming, which includes the Adaptation Platform and the national science assessment. BRACE is designed to address the fact that, while adaptation knowledge products and resources exist, decision-makers lack the capacity and expertise to use them. Capacity building is necessary to translate knowledge into climate change adaptation action.

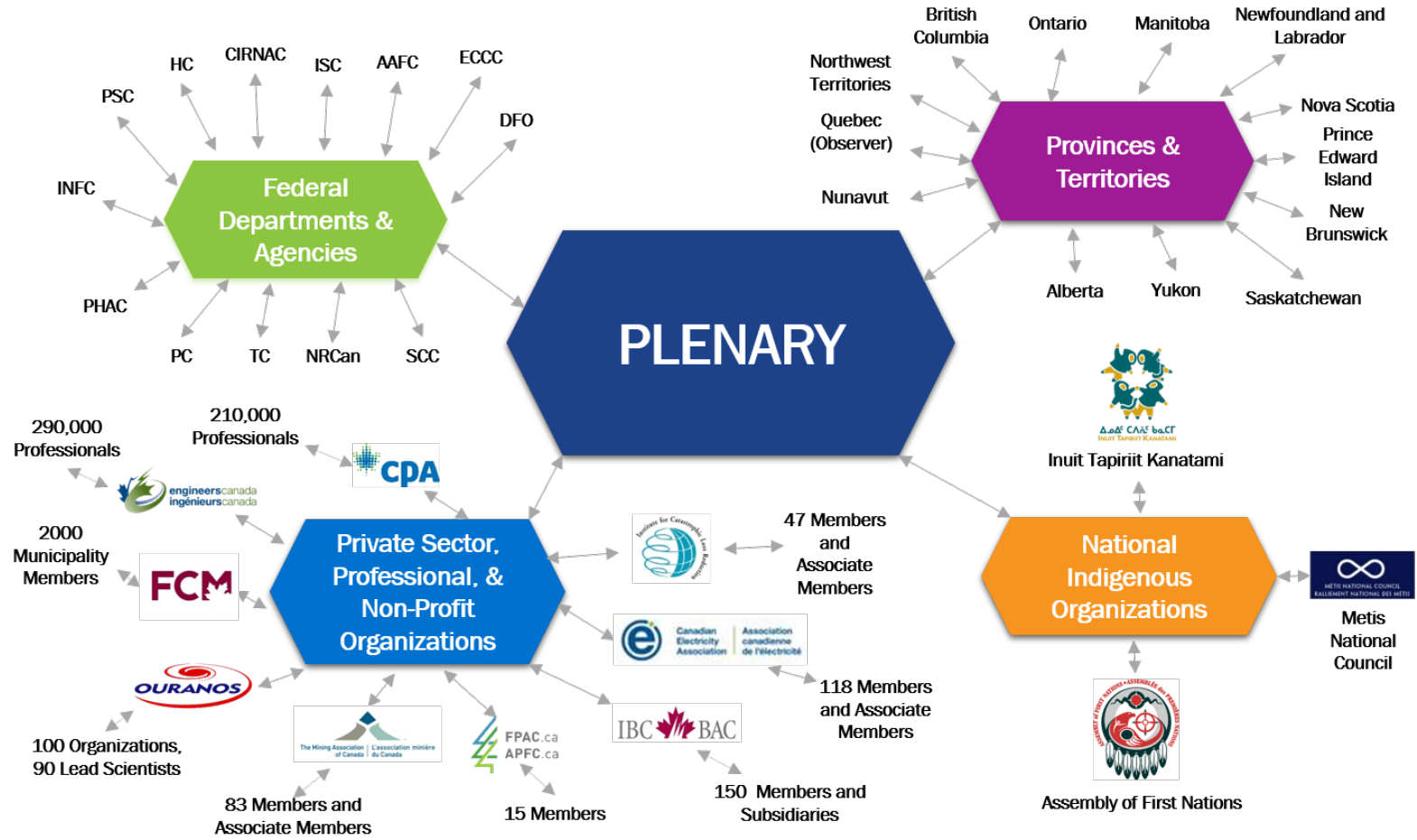
In 2018, CCIAD has been working with the Provinces¹ across Canada to identify priority areas for capacity building and projects which can demonstrate a significant improvement in capacity with BRACE contribution funding. Twenty-two targeted proposals have been submitted in 2018-2019 and are moving toward contribution agreements. BRACE projects target a wide range of audiences with a significant focus on professionals (e.g. engineers, accountants, planners). The BRACE projects also target economic sectors including forestry, mining and business as well as infrastructure. Sector-

focused work will enhance understanding of climate impacts amongst stakeholders, identify risks and opportunities, and develop actions that improve climate resilience. Activities supported through BRACE include training, "learn by doing" and internships. To improve knowledge exchange, CCIAD will also facilitate opportunities for thematic collaboration across regions through various activities such as webinars, workshops, and conferences.

¹ Capacity building in the Territories is addressed under other federal programming.

5. Annex I

Plenary Membership: A Network of Networks



AAFC: Agriculture and Agri-food Canada, CIRNAC: Crown-Indigenous Relations and Northern Affairs Canada, DFO: Fisheries and Oceans Canada, ECCC: Environment and Climate Change Canada, HC: Health Canada, ISC: Indigenous Services Canada, INFC: Infrastructure Canada, NRCan: Natural Resources Canada, PCA: Parks Canada Agency, PHAC: Public Health Agency of Canada, PSC: Public Safety Canada, SCC: Standards Council of Canada, TC: Transport Canada.

Annex II

Leaders Forum: Meeting Summary

BACKGROUND

The Climate Adaptation Leaders Forum is a high-level public/private forum designed to accelerate climate resilience through institutional change. The pilot Leaders Forum, developed and delivered in partnership between Natural Resources Canada (NRCan), Environment and Climate Change Canada (ECCC), the Insurance Bureau of Canada and the Chartered Professional Accountants of Canada, was held on January 23, 2019 (Annex 1: Agenda). Co-chaired by Deputy Minister Christyne Tremblay (NRCan) and Deputy Minister Stephen Lucas (ECCC), the Forum convened 37 senior-level executives from across the finance and investment community to discuss the role of the private sector in growing a climate-resilient economy and catalyzing action and investments in climate adaptation. Participants included representatives from four of Canada's "Big 8" pension investment funds that manage \$1.25 trillion in retirement savings for Canadians (Annex 2: Participating Organizations).

The panel at the Forum presented diverse perspectives across the finance and investment community, and consisted of:

- Charles Brindamour, CEO of Intact Financial Corporation,
- James Hempstead, Managing Director of Moody's Global Project & Infrastructure Finance Group, and
- Kim Thomassin, Executive Vice President of Caisse de dépôt et placement du Québec.

In connection to the efforts of the Expert Panel on Sustainable Finance, panel member Andrew Chisholm was also present to review

the findings of the interim report with a strong focus on the physical risks. The Forum was facilitated by Céline Bak, President of Analytica Advisors.

Speakers and participants discussed:

- Implementing the recommendations of the Financial Stability Board Task Force on Climate-related Financial Disclosure (TCFD) in a Canadian context;
- Findings of Canada's Expert Panel on Sustainable Finance relating to the physical impacts of climate change;
- Aligning capital decisions with efforts to make Canada more resilient to a changing climate; and,
- Improving the capacity to account for climate resiliency in capital decisions and business strategies.

The Forum was the first step towards engaging public and private sectors in a collaborative discussion on the importance of private finance in climate change adaptation.

KEY MESSAGES

The Climate Adaptation Leaders Forum on Finance and Investment recognized that climate adaptation is an economic issue. Discussion highlighted the significant opportunity for Canada to be a global leader in this space by shifting to a low-carbon, climate-resilient economy and developing competitive advantage for more climate-resilient businesses and jurisdictions. The following Key Messages reveal areas for future work in building resiliency in, and through, finance and investment systems.

Changing the Narrative

- A changing climate presents both risks and opportunities. Historically, both discussion and effort have primarily

focused on reducing greenhouse gas emissions and the risks associated with the transition to a low-carbon economy. In order to interest investors of the magnitude represented by the institutional investors in this event, it's important to expand the focus to recognize that climate change presents opportunities that encourage innovation and inventiveness that can increase competitiveness and resiliency.

- In addition, a national narrative is needed to engage Canadians in understanding the importance of adaptation and the risks and associated costs of not adapting. As consumers of financial products, Canadians will create demand for products that respond to climate risks if they are engaged on the predicted impacts of climate change and the implications for the economy and society.

Supporting Climate-Related Financial Disclosure

- Robust climate-disclosure plays a critical role in enabling financial markets to price risk correctly and drive behavioural change within companies. There are different pathways to support climate-related financial disclosure, ranging from legislated climate-related disclosure to disclosure as part of enlightened self-interest. Businesses and jurisdictions seeking to attract investment will be more competitive when they can demonstrate how they have taken climate change vulnerabilities into account, and what they are doing to address the risks that they pose.

Strengthening Data and Training

- The investor community faces challenges in obtaining accessible data to enable precise quantification of physical risk and long-term exposures to physical risk across a portfolio. There are innovative ways to utilize different data sources.

Examples include applying extreme weather analysis, climate scenarios or geospatial mapping to portfolios to guide long-term planning and business strategies. More training and guidance is needed to demonstrate how to use various data forms inventively and how to incorporate climate-related data on physical risks into decision-making by asset class and across entire portfolios.

Youth Engagement

- Typically, younger generations embrace climate-related changes in business strategies more readily. As younger demographics move up into the workplace, they will encourage more immediate action on climate change issues, support the progress changes underway in the investment community, and provide new skill-sets.

Increasing Collaboration

- Collaboration between public and private sectors at all levels, including industry and investors, is critical to effectively mainstream adaptation and drive innovation. These partnerships are a significant component to realize the opportunities afforded by building resiliency within the Canadian finance and investment system.

KEY OUTCOMES

The key outcome from this event will be a directional statement that acknowledges the importance of increasing private sector financial flows toward climate adaptation efforts. The statement will also highlight climate adaptation as an innovation space that could increase competitive advantage for businesses and jurisdictions seeking investment. In addition, there will be an in-depth follow-up

session at the spring 2019 Plenary. The objective of this session is to determine planned next steps between regional jurisdictions and the private sector to support the transition to a carbon-resilient economy.

Annex III

Leaders Forum: Directional Statement

Climate Adaptation Leaders Forum on Finance and Investment Output Statement

The Climate Adaptation Leaders Forum on Finance and Investment on January 23, 2019 convened public and private sectors for a collaborative discussion to discuss the need to build climate resilience and increase financial flows towards climate adaptation efforts to benefit Canadians across all sectors and in all regions.

Context

Some climate-related impacts may occur in the short-term, such as extreme weather events, whilst other impacts may become more apparent as time goes by. Successfully adapting to the physical risks of climate change will require changes by most public and private sector entities in how they operate. Impacts may include additional costs and benefits, operational disruptions and opportunities, along with a shift in long-term strategic and operating plans. The concept of Clean Growth in a climate-resilient economy will also open up new business opportunities.

For many entities, the ability and the extent to which they adapt to climate change will significantly affect their future. Not adapting or not being able to adapt sufficiently may have considerable negative consequences. However, opportunities to innovate, expand market reach and enhance competitiveness will also arise. Canadian capital markets and policy makers need relevant, consistent information to identify how climate change will affect public and private sectors' organizations, and how effectively these entities are adapting. In turn, entities themselves need consistent climate-related financial information for making informed decisions.

In moving towards a climate-resilient economy, collaboration between public and private sectors at all levels is integral. In particular, cross-sectoral collaboration will present strategic opportunities for Canadian companies.

Our Commitment

As Canadian public and private sectors' leaders, we acknowledge that climate change poses significant physical risks to our economy and society. We also recognize that managing these physical risks will make companies and communities more resilient and, in fact, can provide a competitive advantage. We support the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and acknowledge the importance of adapting to extreme weather events and to slow-onset impacts of climate change.

We also understand that climate adaptation is a shared responsibility and that all parties have to do their part as failing to do so can have impacts on others.

We commit to work towards building resilience to climate change and to harness the competitive advantages created by effective and coordinated adaptation efforts.

We acknowledge the need to focus on the following priority areas for Canada:

1. Building physical risk and climate resilience factors into:
 - Investment decisions;
 - Lending decisions;
 - Credit ratings; and,
 - Insurance coverage.
2. Supporting enhanced disclosures on physical climate-related risks and opportunities in alignment with the TCFD recommendations.