



Canada's Top Climate Change Risks

The Expert Panel on Climate Change Risks and
Adaptation Potential



OVERVIEW OF PANEL FINDINGS

John Leggat

Panel Chair

Deborah Harford

Panel Member

CHARGE FROM TREASURY BOARD SECRETARIAT

“What are the top climate change risks facing both Canada and the federal government and their relative significance, and which have the most potential to be minimized by adaptation measures?”

Sub-questions:

- What criteria should be used to assess the relative impact of the risks from a changing climate?
- How should the risks be categorized in order to support effective decision making and action?

THE PANEL



L. John Leggat, FCAE (Chair)



Elizabeth Beale



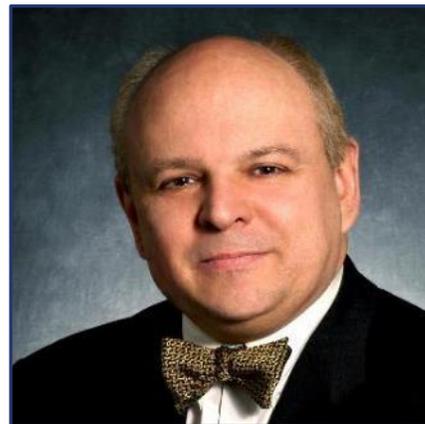
Pierre Gosselin



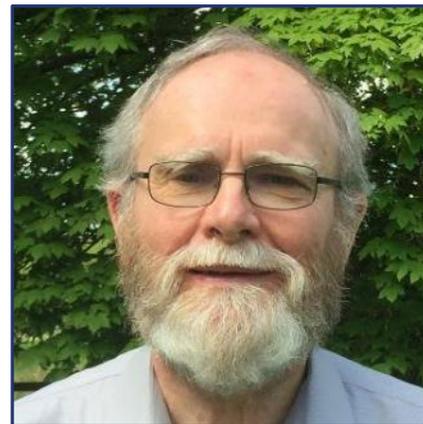
Bronwyn Hancock



Deborah Harford



Paul Kovacs



Roger Street

WHY THIS REPORT NOW?



“Most Canadian governments have not assessed and, therefore, do not fully understand what risks they face and what actions they should take to adapt to a changing climate.”

-Office of the Auditor General of Canada, 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.”

-Pan Canadian Framework on Clean Growth and Climate Change, 2016



KEY SCOPING DECISIONS

- Risks on a national scale
- Medium-term time period: 2020-2040
- Exclusion of beneficial consequences of climate change

EVIDENCE & METHODS

- Two-day facilitated expert workshop (24 participants)
 - Iterative, structured discussion and assessment
- Reliance on expert judgement
- Informed by previous scientific reviews and syntheses



Workshop in Montreal, QC, October 2018

KEY FINDING 1

The Panel identified 12 major areas of climate change risk facing Canada from a national perspective, all of which could involve significant losses, damages, or disruptions over the next 20 years.

12 MAJOR RISK AREAS

<i>Agriculture and Food</i>		<i>Governance and Capacity</i>	
<i>Coastal Communities</i>		<i>Human Health and Wellness</i>	
<i>Ecosystems</i>		<i>Indigenous Ways of Life</i>	
<i>Fisheries</i>		<i>Northern Communities</i>	
<i>Forestry</i>		<i>Physical Infrastructure</i>	
<i>Geopolitical Dynamics</i>		<i>Water</i>	

RISK ASSESSMENT CRITERIA

Consequence

Climate change impacts on:

- The environment and natural systems
- The economy
- Society and culture
- Human health and wellness
- Geopolitical dynamics and governance

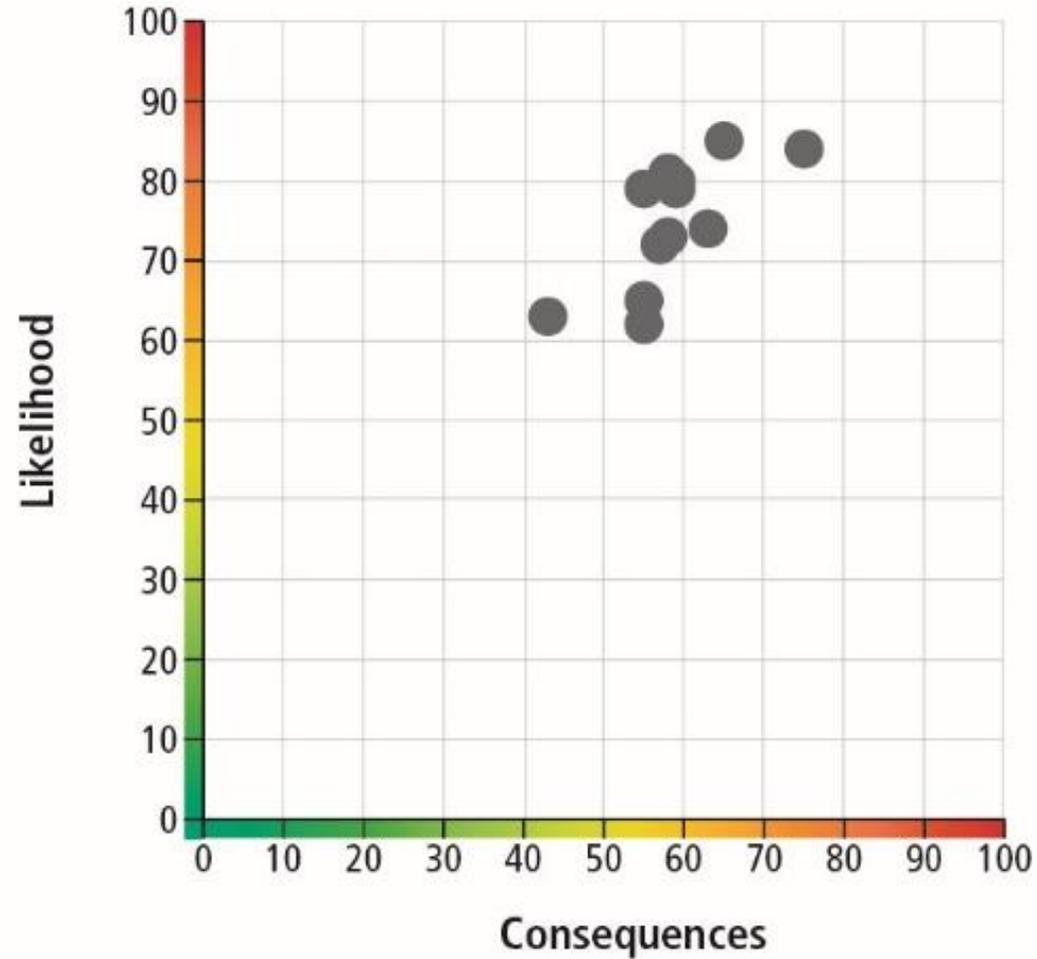
Likelihood

Probability of significant damages, disruptions, and losses over a 20 year period

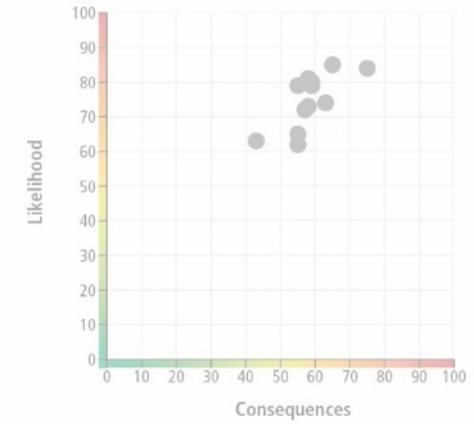
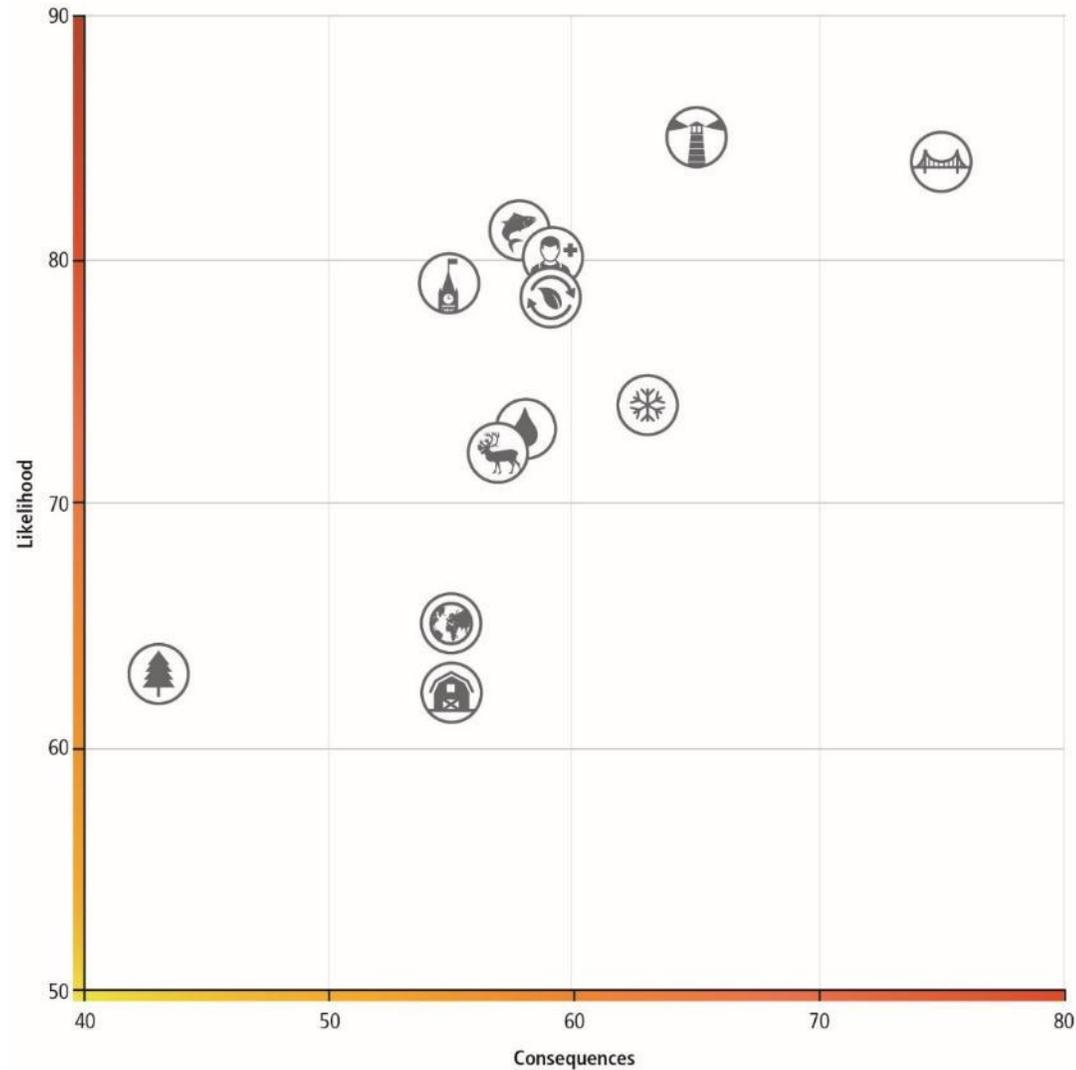
KEY FINDING 1 (cont.)

In the Panel's judgment, the top six areas of climate change risk are: physical infrastructure; coastal communities; northern communities; human health and wellness; ecosystems; and fisheries.

RISK ASSESSMENT RESULTS

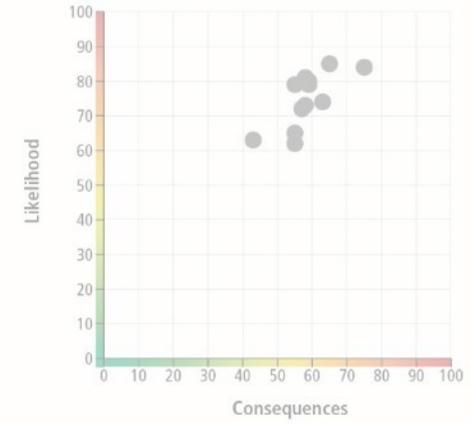
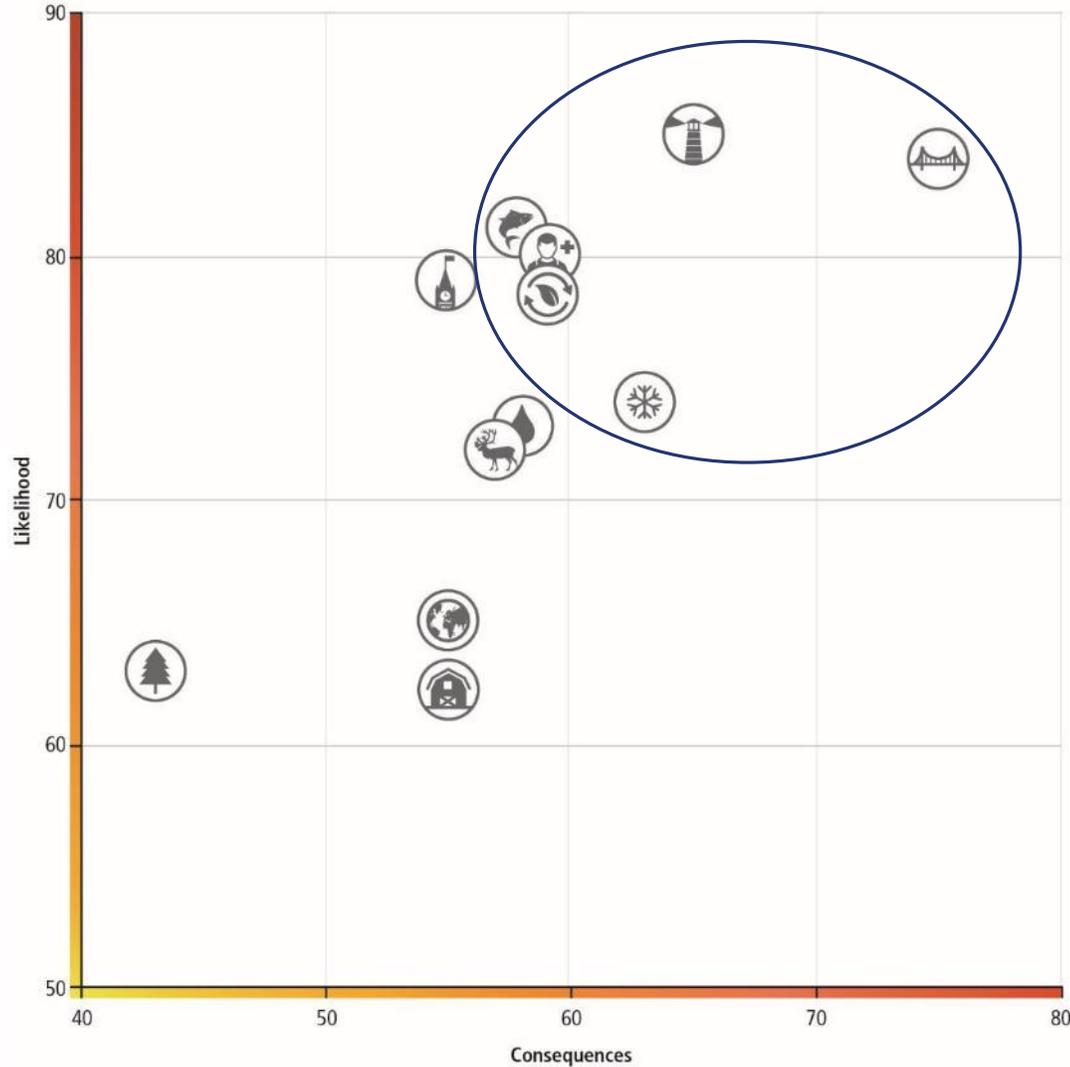


RISK ASSESSMENT RESULTS



- Agriculture & Food
- Coastal Communities
- Ecosystems
- Fisheries
- Forestry
- Geopolitical Dynamics
- Governance & Capacity
- Human Health & Wellness
- Indigenous Ways of Life
- Northern Communities
- Physical Infrastructure
- Water

RISK ASSESSMENT RESULTS



-  Agriculture & Food
-  Coastal Communities
-  Ecosystems
-  Fisheries
-  Forestry
-  Geopolitical Dynamics
-  Governance & Capacity
-  Human Health & Wellness
-  Indigenous Ways of Life
-  Northern Communities
-  Physical Infrastructure
-  Water

KEY FINDING 2

Climate change risks are complex and interconnected, and impacts can propagate through natural and human systems in ways difficult to anticipate.

RISKS TO THE ECONOMY AND BUSINESSES

- The costs of climate change will be significant, affecting individuals, businesses, and governments.
- Climate change costs are already being incurred, as evidenced by payouts from public and private insurance schemes.
- Businesses face direct and indirect costs associated with supply chain disruptions and extreme weather events.
- Understanding of the costs of climate change in Canada is limited; further research could improve decision-making.

KEY FINDING 3

All 12 areas of risk considered by the Panel can be meaningfully reduced through adaptation measures that lessen vulnerability or exposure.

ADAPTATION POTENTIAL

-  Agriculture & Food
-  Fisheries
-  Governance & Capacity
-  Physical Infrastructure
-  Coastal Communities
-  Forestry
-  Human Health & Wellness
-  Water
-  Ecosystems
-  Geopolitical Dynamics
-  Northern Communities

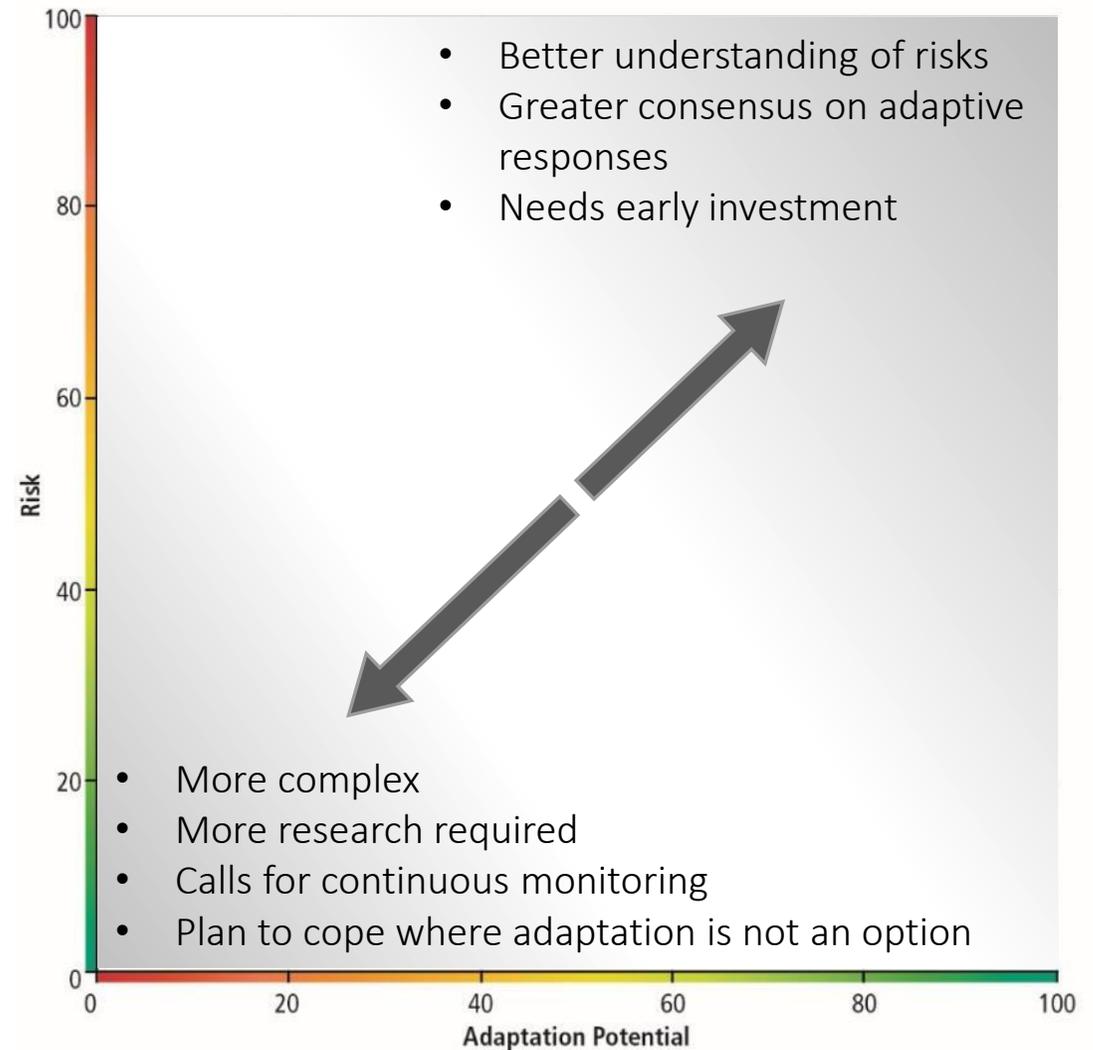
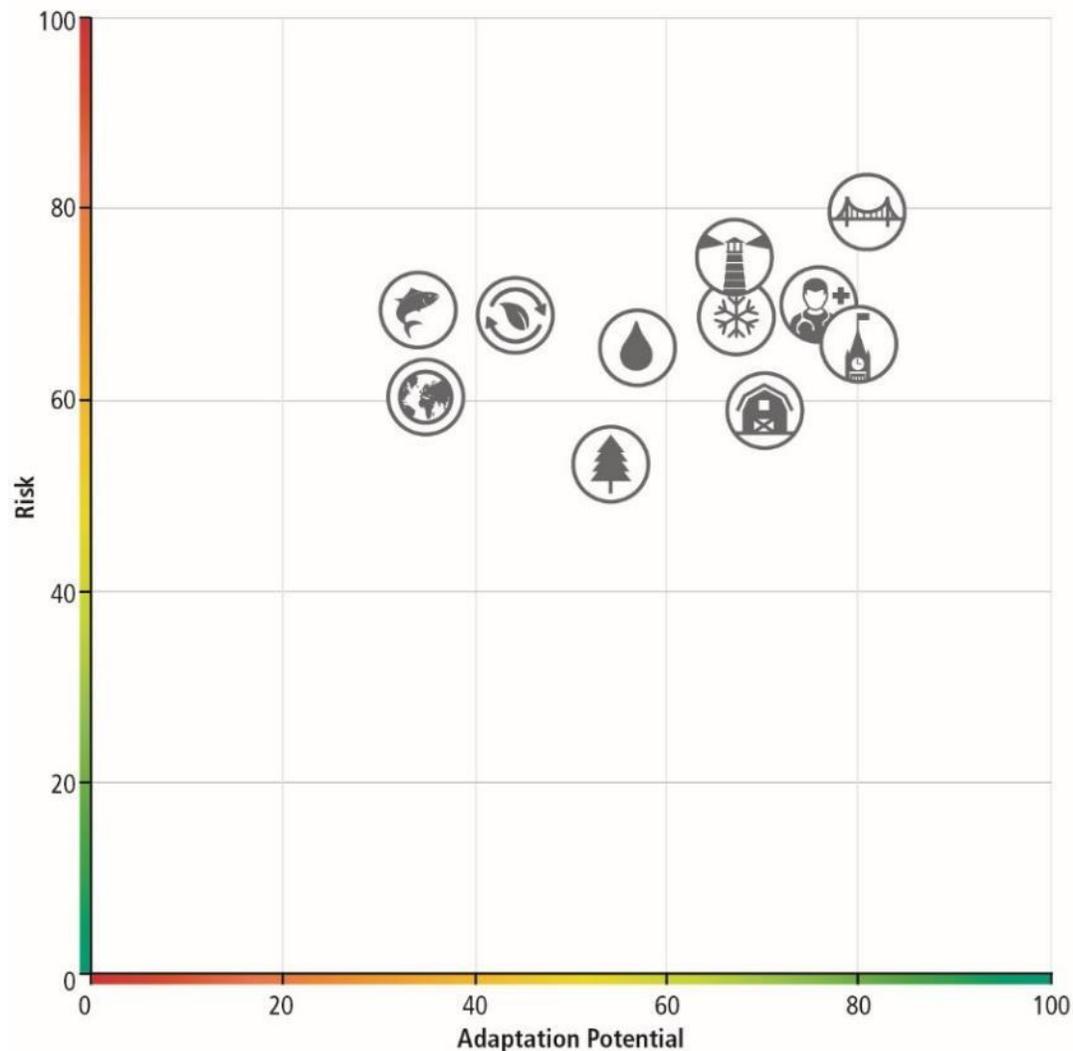


Adaptation Potential
(proportion of damages that can be avoided through adaptation)

CAPITALIZING ON ADAPTATION POTENTIAL

- Interacting effects can amplify or interfere with adaptation strategies.
- Maladaptive actions increase vulnerability and exposure.
- Feasibility considerations include technical barriers and the social context.
- Some periods provide critical windows of adaptation opportunity.
- Adaptation actions can yield co-benefits.

COMBINING ADAPTATION POTENTIAL AND RISK



KEY FINDING 4

Understanding the climate change risks facing Indigenous Peoples in Canada requires a deeper exploration of these risks, and associated adaptation potential, consistent with the spirit of reconciliation.

INDIGENOUS KNOWLEDGE AND PARTICIPATION

- Limited capacity to include Indigenous knowledge; and
- Lack of Indigenous Panel members/experts



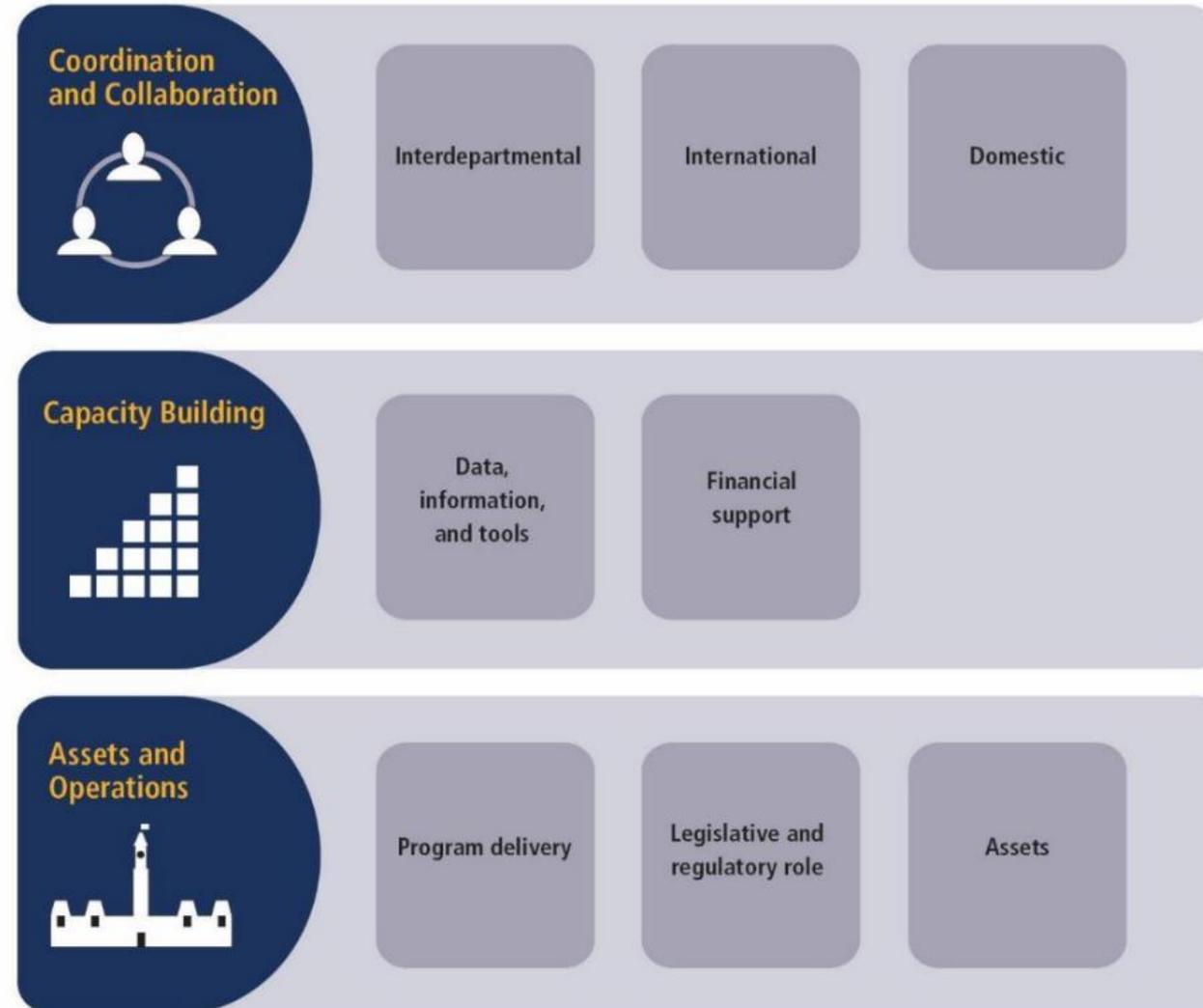
- X Low confidence in assessment of risks to Indigenous ways of life,
- X Unable to assess adaptation potential for these risks

Future climate risk assessments for Canada would benefit from a comprehensive process, potentially co-designed by and co-executed with Indigenous participants.

KEY FINDING 5

Federal responses to each of the 12 areas of climate change risk can be informed by prioritizing actions within and across three main categories: coordination and collaboration, capacity building, and assets and operations.

CATEGORIES OF FEDERAL ACTION



FACTORS INFLUENCING APPROPRIATE FEDERAL ACTIONS

To what extent do each of the following apply?

Coordination and Collaboration



- Wide geographic distribution, and/or the involvement of a wide array of actors
- Multi-dimensional risk, raising health, social, economic, environmental, and/or geopolitical issues
- Need for coordination across federal departments
- Complex adaptation option(s) (e.g., technically, socially, in terms of coordination among actors, involving multiple components)
- Risks to relationships among jurisdictions
- International coordination

Capacity Building



- High degree of uncertainty surrounding this risk and the potential adaptation actions
- Knowledge and evidence gaps requiring research and innovation
- Need for new or improved tools to support adaptation decision-making in this area
- Federal leadership or funding required to enable adaptation by other actors

Assets and Operations



- Existing policies and processes interfere with adaptation
- Potential reduction in the Government of Canada's ability to deliver on its mandate
- Need for policy and programming in areas of federal responsibility
- Threat to federal assets
- Importance of regulatory or legislative levers for enabling and empowering adaptation

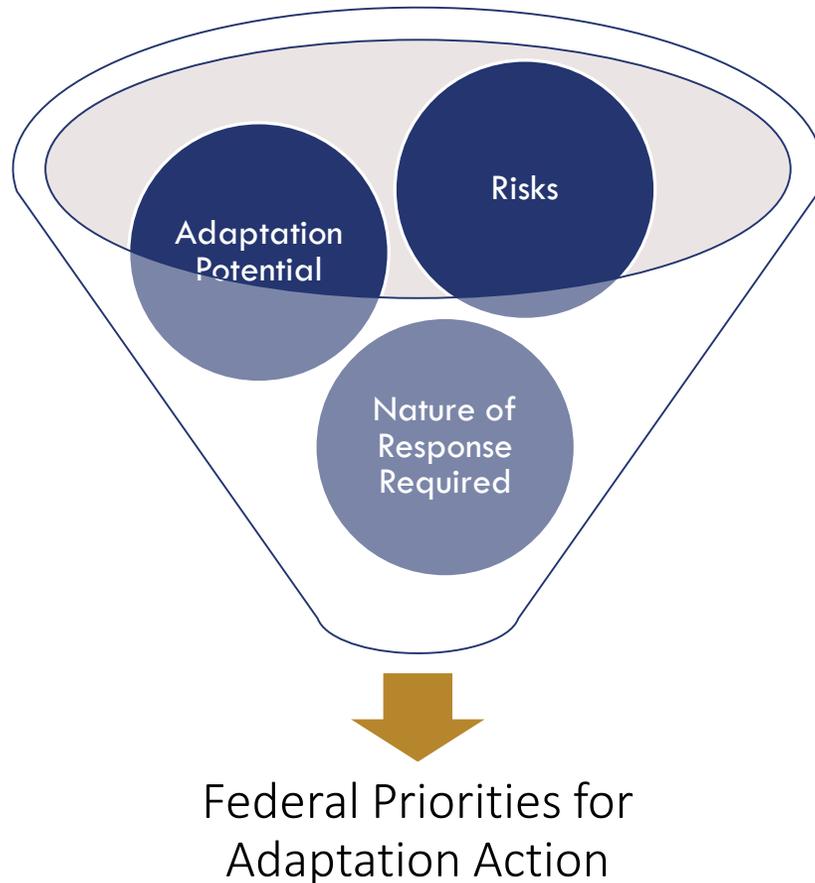
FACTORS INFLUENCING APPROPRIATE FEDERAL ACTIONS

Capacity Building



- High degree of uncertainty surrounding this risk and the potential adaptation actions
- Knowledge and evidence gaps requiring research and innovation
- Need for new or improved tools to support adaptation decision-making in this area
- Federal leadership or funding required to enable adaptation by other actors

FEDERAL PRIORITIES FOR ADAPTATION ACTION



The federal government could benefit from a framework that:

- Supports departmental decision-making, and
- Coordinates horizontal prioritization and collaboration across departments.

FINAL REFLECTIONS

- More research is needed, but a lack of certainty should not serve as a barrier to future risk assessment or adaptation action.
- Structured, well-resourced, inclusive, and regularly repeated risk assessments enhance transparency, legitimacy, and usefulness.
- Linking future risk assessments to a formal evidence report would add rigour.
- A deeper exploration of risks facing Indigenous Peoples in Canada is warranted.
- National risk assessments could enable and encourage other jurisdictions to establish complementary processes.

 QUESTIONS?



 www.cca-reports.ca

 [@cca_reports](https://twitter.com/cca_reports)

 madison.downe@cca-reports.ca