



# Strength, resilience, sustainability

Canada's construction sector recommendations  
on adapting to climate change

## Executive Summary and Key Findings

## CONTEXT

In a country with the world's longest coastline, wide-ranging geography and climate zones, and rugged, northern winters, ensuring that infrastructure can withstand the conditions that prevail across the country has always been a key tenet of construction project planning, design, and execution.

But the conditions that have prevailed are changing. Our climate is in flux. Whether it is increased damage from flooding, extreme precipitation, high winds, ice storms, or wildfires; power outages and grid failures associated with heatwaves and high demand for air conditioning; or thawing permafrost, the evidence is everywhere, and the risks (and costs) are significant.

Physical infrastructure has been assessed as one of six major climate change risk areas that are nationally significant and could lead to significant losses, damages, or disruptions over the next 20 years in Canada.<sup>i</sup> It has been estimated that infrastructure failures linked to climate change could cost Canada \$300 billion over the next decade if no further changes are made to existing practices.<sup>ii</sup>

So, what needs to be done to ensure the Canadian construction sector has the ability to be part of the solution, both in terms of reducing greenhouse gas (GHG) emissions and fortifying existing and new infrastructure against the impacts of climate change? The Canadian Construction Association (CCA) has developed this white paper to examine the issue of the construction sector's adaptation to climate change and to make recommendations.

## TAKING ACTION TO ADAPT

This paper surveys national and international research and data to explore the linkages between climate risk and infrastructure decisions; the cost of addressing the issue and the cost of doing nothing; how other jurisdictions are responding to the same challenges; and efforts already underway in the Canadian construction industry. At its heart is a call to action to government and other key stakeholders on the critical need to act now to take into consideration our changing climate, building strength, resilience and sustainability into infrastructure projects.

The timing is propitious. The COVID-19 pandemic has created a pressing need to find pathways to economic recovery. Supranational, national, and subnational governments have recognized the important role infrastructure investments can play in the recovery. Canada has too and, at the same time, is focused on building back better.

Part of building back better means adapting our construction practices to climate change. The Canadian construction sector sees the urgency and is prepared to play its part but achieving greater resiliency in the construction sector necessitates a broad paradigm shift, towards a long-term investment model that values resilient design and materials up-front.

Long-term thinking and broad-based action will pay dividends. Research indicates that the benefits of investing in community adaptation and resilience outweigh the cost of such investments by a ratio of six to one.<sup>iii</sup> Moreover, the potential to effect environmental and economic change in the construction sector is immense. The Canadian construction industry accounts for 1.4 Million people, generating \$141 Billion to the economy annually which accounts for 7.5% of Canada's gross domestic product.— it also consumes 40 per cent of Canada's energy.

The Government of Canada has highlighted the importance of long-term thinking and broad-based action with the recent announcement of Canada's first-ever *National Infrastructure Assessment*. The Assessment will use data and evidence to identify Canada's long-term infrastructure needs and priorities, linking government investments with desired policy outcomes, and ensuring a plan for pandemic recovery that creates jobs, competitive advantage, and long-term growth, while building a cleaner, more inclusive future for all Canadians.<sup>iv</sup> This is an important step.

But more is needed than simply identifying challenges or even making commitments. There is also a need for new approaches, informed by the latest data and technologies, and codified into standards, regulations, and corporate practices over time. A rigorous approach to continuous improvement is what will ensure that investments in infrastructure resilience have the greatest impact, both financially and environmentally.

Moreover, whether a project is being tendered to address a specific climate-related concern or an unrelated infrastructure need, the project scoping must deliberately make room for resiliency considerations. In a competitive landscape, it is unrealistic to think that construction companies will add costs to their bids to take into account long-term resilience if the client, whether within the public or private sectors, does not explicitly consider it a requirement of the bid.

CCA stands ready to play its part and offers the following recommendations for the federal government and other key stakeholders, including its members, to help advance the work.

## RECOMMENDATIONS

- The Government of Canada's *National Infrastructure Assessment* should provide a **national vision for infrastructure resilience**. Notably it should:
  - o Bring together builders, policymakers, communities, Indigenous governments, provincial and territorial governments, municipalities, key stakeholders, and the general public around the common purpose of improving infrastructure resilience.
  - o Provide a common understanding of the challenge of infrastructure resilience and a recognition of the investment needed to address it.
  - o Recognize that infrastructure is far from homogenous and therefore a framework from which regional solutions and sectoral approaches can be developed is preferable to prescriptive remedies.
  - o Seek to align infrastructure priorities from all levels of government – municipal, provincial, territorial, and federal, as well as Indigenous governments.
  - o Identify international best practices and learn from them.
  - o Widely share international and domestic best practices to inform the national conversation.
  - o Update the national vision every five years to reflect the ever-evolving context; and, most importantly,
  - o Include a commitment to immediate action on the findings.
- Canada needs policies and approaches that support **better data, technologies, tools, and standards**. This is a joint responsibility of government and industry. Notably, we must:
  - o Improve data accessibility including climate modeling, modeling and tracking of migration patterns of populations which can now be prohibitively expensive – the Climate Data Canada portal, launched by the Government of Canada in June 2019, is an excellent example and deserves more visibility within the construction sector, which CCA is prepared to help facilitate.
  - o Incentivize the development and deployment of innovations that align with national infrastructure goals – this should be a top government priority going forward.
  - o Update standards and regulations as materials and approaches are tested and de-risked, so best practices are incorporated into updated standards that govern and guide how infrastructure is built in Canada. This is a joint responsibility of governments and industry.

- o Continue to contribute to the development by the Canadian Standards Association of a national resilience taxonomy to help identify investments as 'sustainable.' This is ongoing and a joint responsibility of governments and industry.
- o Develop processes and structures for risk-based climate adaptation management plans by Canadian construction companies. CCA is currently developing a guide for member companies to design and implement climate adaptation management plans.
- As a society we must be willing to pay the roughly 10 percent in additional cost for resilience and governments at all levels must ensure that **procurement and project design are aligned with the national vision for infrastructure resilience.**
  - o While we can and should expect companies to compete to deliver the desired level of resilience at the least cost, required resilience must be clearly stated by governments at the tendering stage.
  - o Through repayable and non-repayable contributions, governments should help to defray costs that are directly related to the improved climate resilience of an asset.

## A FINAL WORD

There is no time to waste. Communities are living with growing climate risk every day and project design and capital allocation decisions are being made without appropriate resilience assessment. While the *National Infrastructure Assessment* is essential, we cannot wait years for a full accounting of the issue and a comprehensive strategy – we must begin the journey today.

As Canada builds back better with infrastructure investments, the role of infrastructure as not only a driver of economic growth but also innovation must be recognized. In addition to supporting Canada's post-pandemic economic recovery strategy and putting Canadians to work today, these investments can be used to accelerate the transition to stronger, more resilient and sustainable infrastructure, capable of withstanding the challenges and risks of climate change. Working together we can weather the storm ahead, but there is not a moment to lose.

CCA and its members are committed to the work ahead and stand ready to play a constructive and collaborative role.

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- i Council of Canadian Academies, 2019. *Canada's Top Climate Change Risks*, Ottawa (ON): The Expert Panel on Climate Change Risks and Adaptation Potential, Council of Canadian Academies. [cca-reports.ca/wp-content/uploads/2019/07/Report-Canada-top-climate-change-risks.pdf](https://cca-reports.ca/wp-content/uploads/2019/07/Report-Canada-top-climate-change-risks.pdf)
  - ii John Arsenault. "Canada's Building Code is Getting a Climate Change Rewrite. Is Your Home Ready?" April 2019. CBC News. [cbc.ca/news/canada/canada-building-code-climate-change-resilience-1.5092732](https://cbc.ca/news/canada/canada-building-code-climate-change-resilience-1.5092732)
  - iii Martinez-Diaz, L., 2018, Investing in resilience today to prepare for tomorrow's climate change. *Bulletin of the Atomic Scientists*, 74:22, pp. 66-72.
  - iv "Minister of Infrastructure and Communities Catherine McKenna's Speech to the Canadian Club Toronto," November 2020. Infrastructure & Communities Canada. [canada.ca/en/office-infrastructure/news/2020/11/minister-of-infrastructure-and-communities-catherine-mckennas-speech-to-the-canadian-club-toronto.html](https://canada.ca/en/office-infrastructure/news/2020/11/minister-of-infrastructure-and-communities-catherine-mckennas-speech-to-the-canadian-club-toronto.html).