

## **Climate Emergency: Investing in Health Evidence to Support Canada’s Transition to a Low Carbon Economy**

*Submission for the 2020 Pre-Budget Consultations*

### **Recommendations**

**Recommendation 1:** That the Government of Canada, in an effort to develop national policies for climate change mitigation and adaptation, make a significant investment in research focused on the unique climate change-related health issues faced by Canada’s diverse populations.

**Recommendation 2:** That the Government of Canada invest in research with, by and for Indigenous Peoples, elucidating the unique impact of climate change on the health, wellbeing and economic lives of Indigenous Peoples and recognizing the leadership role Indigenous Peoples play in developing mitigation and adaptation actions that sustain the resilience of social and ecological systems.

**Recommendation 3:** That the Government of Canada make a significant investment in research focused on the complex interactions between climate change and emerging infectious diseases (EIDs) in order to amplify Canada’s global leadership in developing solutions for EIDs, promote a competitive business environment that encourages related research and development (R&D) investment by knowledge-based industries, and advance Canada’s global health security agenda.

## Introduction

Research Canada applauds the Government of Canada's dedication to transitioning to a low-carbon economy as an essential aspect of mitigating the impact of climate change. We commend the government's \$3-million investment to help 10 health authorities respond to climate change's human impacts, as well as its two-year, \$1.7-million investment toward eight projects working to improve Canadians' health in the face of a changing climate. Effectively engaging Canadians on climate change, however, remains a major research question and a communication challenge.<sup>1</sup> Research suggests that framing climate change in terms of public health may make it more personally relevant and emotionally compelling to segments of the public who are disengaged or dismissive.<sup>2</sup> Audiences find the information motivating and experience feelings of hope and efficacy, which are strongly correlated with a willingness to engage in pro-environmental behaviors and support climate change policies.<sup>3</sup> Our recommendations therefore speak to the value of investing in Canadian health research given its ability to provide the evidence that will elicit public buy-in to ensure Canada's climate emergency response is successful. Our recommendations also address the need for Canada to develop appropriate tools and strategies to protect the health and wellbeing of Canadians through the challenges ahead.

**About Research Canada:** Research Canada is a national alliance whose mission is to improve the health and prosperity of all Canadians by championing Canada's global leadership in health research and innovation.

## Detailed Recommendations

**Recommendation 1:** *That the Government of Canada, in an effort to develop national policies for climate change mitigation and adaptation, make a significant investment in research focused on the unique health issues and challenges faced by Canada's diverse population.*

While the economic losses of climate change-related events are tracked,<sup>4</sup> little is understood about the potential magnitude of these impacts on the health of individuals and communities and how to best prepare for them, including in Canada. Only 4% of articles published on climate change in 2017 had any link to health, and fewer than 1% had a particular health focus.<sup>5</sup> Since 2009, only 0.2% of funded awards by the Canadian Institutes of Health Research (CIHR) have included "climate change" in their abstracts.<sup>6</sup>

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<sup>1</sup> Teresa Myers, Matthew Nisbet, Edward Maibach, Anthony Leiserowitz, A public health frame arouse hopeful emotions about climate change, *A Letter, Climactic Change* (2012), 113:1105-1112

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup>The Lancet. *The 2018 report of the Lancet Countdown on health and climate change: shaping the health of nations for centuries to come.* <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2818%2932594-7>

<sup>5</sup> Ibid.

<sup>6</sup> HealthyDebate.ca. *Why is Canada so behind in research on climate change and health?* July 2018. <https://healthydebate.ca/opinions/climate-change-and-health>

Many potential human health impacts due to climate change have already been identified. The Lancet Countdown, established by a leading medical journal to monitor the health impacts of climate change, has called it “the biggest global health threat of the 21<sup>st</sup> century.”<sup>7</sup> Illnesses due to extreme cold and heat events; increased allergens, respiratory diseases and heart attacks due to poor air quality; increased intestinal disorders brought on by water- or food-borne contamination; and altered patterns of diseases caused by pathogens carried by mosquitos, ticks and animals are among climate-related areas of concern raised by Health Canada.<sup>8</sup> Researchers have only recently started considering the link between climate change and the physiological limits of exposure to work-based ambient heat.<sup>9</sup> Increased food insecurity is another direct side-effect.<sup>10</sup> Potential indirect impacts requiring investigation include psychosocial trauma due to damaged housing; disruption of supportive social networks during emergencies; increased health risks due to damaged critical infrastructure; interference with livelihoods (e.g. farming); and an increased demand for healthcare services.<sup>11</sup>

With such multifold impacts, research requires an interdisciplinary approach, drawing together social, economic, physical and mental health domains. It should take into account potential compounding effects of social inequities, such as gender and membership in a vulnerable population (e.g. children, seniors, people with disabilities, people who are low-income or homeless). Gaps in our understanding about impacts on air quality, food and water quality/availability, and the surveillance, prevention and control of zoonotic and vector-borne diseases would benefit from a collaborative approach across non-health sectors, government, academia and the private sector.

**Recommendation 2:** *That the Government of Canada invest in research that helps grow our country’s expertise regarding the impact of climate change on the health, wellbeing and economic lives of Indigenous Peoples and recognizes the leadership role Indigenous Peoples play in developing adaptation and mitigation actions that sustain the resilience of social and ecological systems.*

The health, mental wellness and identities of many Indigenous Peoples are intimately linked to the environment, their ability to hunt, trap, fish, forage and travel on the land, and to the practice of cultural traditions related to being on the land. Additionally, the food security of many Indigenous communities, commonly located at the “social-ecological margins of human

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<sup>7</sup> The Lancet. *The 2018 report of the Lancet Countdown on health and climate change: shaping the health of nations for centuries to come.* <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2818%2932594-7>

<sup>8</sup> Health Canada. *Climate change and health: Health effects.* <https://www.canada.ca/en/health-canada/services/climate-change-health.html>

<sup>9</sup> Tord Kjellstrom, *Productivity Losses Ignored in Economic Analysis of Climate Change*, United Nations University, 2014-09-23, <https://unu.edu/publications/articles/productivity-losses-ignored-in-economic-analysis-of-climate-change.html>

<sup>10</sup> Meera Shekar, *Climate change and malnutrition must be tackled together*, World Bank Blogs, Investing in Health, January 27, 2019, <https://blogs.worldbank.org/health/climate-change-and-malnutrition-must-be-tackled-together>

<sup>11</sup> Health Canada. *Climate change and health: Populations at risk.* <https://www.canada.ca/en/health-canada/services/climate-change-health/populations-risk.html>

habitation,”<sup>12</sup> is dependent on the environment’s ability to support healthy populations of animals and vegetation.<sup>13</sup> Climate-related environmental changes including melting sea ice and snow, unstable weather patterns as well as seasonal temperatures, act as barriers to accessing the land and may compromise people’s physical safety and interfere with their ability to practice these traditional activities.<sup>14,15</sup>

Such changes can have dramatic impacts on the mental health and wellbeing of Indigenous communities, contributing to increased family stress due to spending more time at home in confined spaces, drug and alcohol misuse and suicidal ideation due, in combination with other stressors, to feelings of diminished self-worth and value.<sup>16</sup> These stressors can amplify the sense of disempowerment associated with previous traumas and experiences with colonization.<sup>17,18</sup>

Canadian research in all of these areas is sorely lacking and its benefits will extend beyond Indigenous communities to Canadians at large. As close observers and interpreters of changes in their environments, Indigenous communities embody collectively-held knowledge and bring valuable insights that are complementary to Western science.<sup>19</sup> Given that Indigenous communities have already taken many steps toward mitigating the health effects of climate change,<sup>20</sup> Canada can follow their lead, providing support to existing Indigenous-led research and solutions so that they can scale and spread.

**Recommendation 3:** *That the Government of Canada make a significant investment in research focused on the complex interactions between climate change and emerging infectious diseases (EIDs) in order to strengthen Canada’s global leadership in developing solutions for EIDs, promote a stable and competitive business environment that encourages R&D investment in these areas by knowledge-based industries, and advance Canada’s global health security agenda.*

Changes in temperature, rainfall and humidity allow “vectors”—agents such as mosquitoes, ticks, rodents and bats that carry and transmit infectious pathogens—to multiply, expand their ranges or migrate to new areas, bringing infectious diseases with them. In recent years, dangerous vector-borne diseases such as West Nile and Lyme disease have spread and spiked, and there has

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<sup>12</sup> Gleb Raygorodetsky, *Why traditional knowledge holds the key to climate change*. United Nations University, 2011-12-13, <https://unu.edu/publications/articles/why-traditional-knowledge-holds-the-key-to-climate-change.html>

<sup>13</sup> Sherilee et al. *Climate-sensitive health priorities in Nunatsiavut, Canada*. 2015. DOI 10.1186/s12889-015-1874-3

<sup>14</sup> Cunsolo et al. *Climate change and mental health: an exploratory case study from Rigolet, Nunatsiavut, Canada*. August 2011. DOI 10.1007/s10584-013-0875-4

<sup>15</sup> Sherilee et al. *Climate-sensitive health priorities in Nunatsiavut, Canada*. 2015. DOI 10.1186/s12889-015-1874-3

<sup>16</sup> Cunsolo et al. *Climate change and mental health: an exploratory case study from Rigolet, Nunatsiavut, Canada*. August 2011. DOI 10.1007/s10584-013-0875-4

<sup>17</sup> Ibid.

<sup>18</sup> Sherilee et al. *Climate-sensitive health priorities in Nunatsiavut, Canada*. 2015. DOI 10.1186/s12889-015-1874-3

<sup>19</sup> Gleb Raygorodetsky, *Why traditional knowledge holds the key to climate change*. United Nations University, 2011-12-13, <https://unu.edu/publications/articles/why-traditional-knowledge-holds-the-key-to-climate-change.html>

<sup>20</sup> United Nations, Backgrounder, Indigenous Peoples, Indigenous change and Indigenous peoples, [https://www.un.org/en/events/indigenousday/pdf/Backgrounder\\_ClimateChange\\_FINAL.pdf](https://www.un.org/en/events/indigenousday/pdf/Backgrounder_ClimateChange_FINAL.pdf)

been an increased emergence and re-emergence of infectious diseases globally over the past 10 years. Such changes are undoubtedly a major consequence of climate change.<sup>21</sup>

As a result, Canada must support research that deepens our understanding of the relationships between climate change and EIDs and that contributes to the development of tools, systems and interventions so that we can prevent, predict, mitigate and manage related infectious disease outbreaks. A more precise understanding of the climate change-EID relationship would account for coincidental factors that may also influence disease transmission, such as antimicrobial drug resistance and human behaviour (e.g. due to population growth and mobility, effectiveness of public health efforts), as well as how EIDs may interact with changing demographics, such as an aging population more prone to chronic disease.

Investments into fundamental research, advanced analytical tools and prevention interventions are an opportunity for Canada to strengthen its position as a global leader in understanding, mitigating and managing EIDs, demonstrated during the 2003 SARS epidemic and 2014 Ebola outbreak. Significant investments are needed into fundamental research about pathogens, molecular mechanisms of transmission and their effect on human health. Research into harnessing artificial intelligence, as well as modern genomics and bioinformatics, can contribute to outbreak detection, source location and identification of predictive genetic changes.

The increasing threat of EIDs also demands R&D to advance effective and fit-for-purpose tools and technologies, such as vaccines, drugs, diagnostics, personal protective equipment and medical devices that will not only help identify and contain outbreaks, but also care for those affected.<sup>22</sup> Having a stable and competitive business environment in which the health and biosciences sector can innovate is essential to the state of our preparedness and to ensuring that future major outbreaks are contained efficiently with minimal loss of life.

## **Conclusion**

We need made-in-Canada research into the human health impacts of climate change to inform prevention, mitigation and management strategies, as well as innovations that are appropriate to the specific and unique needs of Canada's diverse populations. Efforts must include research with Indigenous Peoples, who traditionally derive their identity and food security from the natural environment and whose communities hold valuable knowledge that can shine a light on the way forward. Given that climate change is likely to lead to the forced migration of millions of

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<sup>21</sup> Government of Canada, Public Health Agency of Canada, *What to expect with climate change?* CDR, Volume 45-4, April 4, 2019; *Climate change and infectious diseases: The Challenges* <https://www.canada.ca/en/public-health/services/reports-publications/canada-communicable-disease-report-ccdr/monthly-issue/2019-45/issue-4-april-4-2019/article-1-climate-change-infectious-diseases.html>

<sup>22</sup> Commission on a Global Health Risk Framework for the Future; National Academy of Medicine, Secretariat, *The Neglected Dimension of Global Security: A Framework to Counter Infectious Disease Crises*, Washington (DC): [National Academies Press \(US\)](https://www.ncbi.nlm.nih.gov/books/NBK368388/); 2016 May 16. <https://www.ncbi.nlm.nih.gov/books/NBK368388/>

people,<sup>23</sup> it is in Canada's interest to invest in research in this arena, as a leading contributor to the global health agenda and as a major recipient of displaced populations. Such research holds the potential to protect the health and wellbeing of those living in Canada and generate long-term commercial and economic dividends.

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<sup>23</sup> Penny Becklumb. *Climate Change and Forced Migration: Canada's Role*, Library of Parliament, February 2013. <https://lop.parl.ca/staticfiles/PublicWebsite/Home/ResearchPublications/BackgroundPapers/PDF/2010-04-e.pdf>