The Lancet Countdown on Health and Climate Change

Policy brief for Canada

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LANCET COUNTDOWN: TRACKING PROGRESS ON HEALTH AND CLIMATE CHANGE

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Introduction

Climate change is the biggest global health threat of the 21st century,[1] and tackling it could be our greatest health opportunity.[2]

"The health of a child born today will be impacted by climate change at every stage in their life. Without significant intervention, this new era will come to define the health of an entire generation."[3]

However, another path is possible: a world that meets the ambition of the Paris Agreement and proactively adapts to protect health from the climate impacts we cannot now avoid. This year's briefing presents key findings and recommendations toward this path.

Key messages and recommendations

1

Finding: Exposure to wildfires is increasing in Canada, with more than half of the 448,444 Canadians evacuated due to wildfires between 1980 and 2017 displaced in the last decade.

Recommendation: Incorporate lessons learned from recent severe wildfire seasons into a strengthened pan-Canadian emergency response approach that anticipates increasing impacts as the climate continues to change.

2

Finding: The percentage of fossil fuels powering transport in Canada remains high, though electricity and biofuels are gaining ground. Fine particulate air pollution generated by transportation killed 1063 Canadians in 2015, resulting in a loss of economic welfare for Canadians valued at approximately $8 billion dollars.

Recommendation: Develop provincial and territorial legislation requiring automakers to gradually increase the annual percentage of new light-duty vehicles sold that are zero emissions, working toward a target of 100% by 2040.

3

Finding: Canada has the third-highest per capita greenhouse gas emissions from healthcare in the world, with healthcare accounting for approximately 4% of the country's total emissions.

Recommendation: Establish a sustainable healthcare initiative that assembles experts from research, education, clinical practice, and policy to support Canada's healthcare sector in reducing greenhouse gas emissions and preventing pollution-related deaths, consistent with healthcare's mandate to 'do no harm' and the timelines and goals of the Paris Agreement, charting a course for zero-emissions healthcare by 2050.

4

Finding: The health of Canadians is at risk due to multiple and varied risks of climate change, including those described in this policy brief (see Figure 1). An ongoing, coordinated, consistent and pan-Canadian effort to track, report, and create healthy change is required.

Recommendation: Integrate health considerations into climate-related policymaking across sectors, including in Canada's updated 2020 Nationally Determined Contribution Commitments under the United Nations Framework Convention on Climate Change (UNFCCC) process, and increase ambition to ensure Canada commits to doing its fair share in achieving the goals of the Paris Agreement.

Health and climate change in Canada

Imagine an infant born today in Canada. This child enters a country warming at double the global rate, with the average temperature in Canada having increased 1.7°C between 1948-2016.[4] The North is warming even faster: areas in the Northwest Territories' Mackenzie Delta are now 3°C warmer than in 1948.[5] Climate-related impacts on health and health systems are already being felt,[6] with examples outlined in Figure 1. By the time the child is in their twenties, in all feasible emissions scenarios, Canada will have warmed by at least 1.5°C as compared to a 1986-2005 reference period.[4]

Figure 1: Examples of impacts of Climate Change on Health and Health Systems in Canada

Two scenarios are possible for the remainder of the child's life.

If GHG emissions continue to rise at the current rate (a situation referred to by the Intergovernmental Panel on Climate Change (IPCC) as the "high emissions scenario," or 'RCP8.5') temperature increases in Canada will continue after 2050, reaching 6°C relative to 1986-2005 by the time the child is in their child's sixties.[4] Globally, this degree of warming places populations at a greater risk of wildfires, extreme heat, poor air quality, and weather-related disasters. It will also lead to changes in vector-borne disease, as well as undernutrition, conflict, and migration. These impacts and others negatively impact mental health,[3] including via ecological anxiety and grief.[8] Climate change will not impact everyone equally, and can widen existing disparities in health outcomes between and within populations, with Indigenous populations, people in low-resource settings,[28] and future generations[29] disproportionately affected.[30] This degree of warming has the potential to disrupt core public health infrastructure and overwhelm health services.[2]

Alternatively, if global emissions peak soon and quickly fall to net zero, consistent with the IPCC's low-emissions scenario, (RCP 2.6), temperatures will remain steady from 2040 onwards.[4] Measures needed to accomplish this, such as increasing clean energy, improving

public transit, cycling and walking rates, and adhering to a plant-rich diet in accordance with Canada's new food guide, decrease emissions, and also improve health and decrease healthcare costs.[30]

Canada is not on track: in 2016, total Canadian GHG emissions were 704 Mt CO_{2e}, an increase of more than 100 Mt since 1990.[31] Policies and measures currently under development but not yet implemented are forecast to reduce national emissions to 592 Mt CO_{2e} by 2030,[32] 79 Mt CO_{2e} above Canada's 2030 target of 513 MtCO_{2e}[32]—a goal which is itself too weak to represent a fair contribution by Canada to the emissions reductions necessary to meet the goals of the Paris Climate Change Agreement.

The Earth as a whole is warming less quickly than Canada—but still far too fast. The IPCC and the World Health Organization have emphasized that keeping global surface temperature warming to 1.5°C is key to obtaining the best outcomes now possible for human health.[33,34] To do so would require global net human-caused emissions to fall by about 45% from 2010 by 2030, reaching 'net zero' by 2050.[34] Updated Nationally Determined Contributions to the Paris Agreement are due to be submitted by 2020: policymakers must integrate health considerations through proposed interventions.

2019 marks a crux point for humanity: choices and policies made in the lead up to the 2020 UNFCCC Nationally Determined Contribution submissions will determine whether the world follows the disastrous high-emissions scenario, or the safer low-emissions path. Children are taking to the streets to demand a livable world. It is the task of today's political leaders and other adults to exert maximal effort within their spheres of influence in order to set a course for a healthy response to climate change.

Indicators of climate-related health impacts and adaptation

This year's policy brief presents information on three key indicators of climate-related health impacts and adaptive responses. Additional recommendations can also be found in the 2017 and 2018 policy briefs.[6,24]

Wildfires

Lancet Countdown data indicates that the number of daily population wildfire exposure events increased from an average of 35,300 in 2001-2004 to 54,100 in 2015-2018, not including those subjected to wildfire smoke. Canadian data supports increasing impacts: more than half of the 448,444 Canadians evacuated due to wildfires between 1980-2017 were displaced in the last decade.[35] These exposures not only pose a threat to public health, but also result in major economic and social burdens.

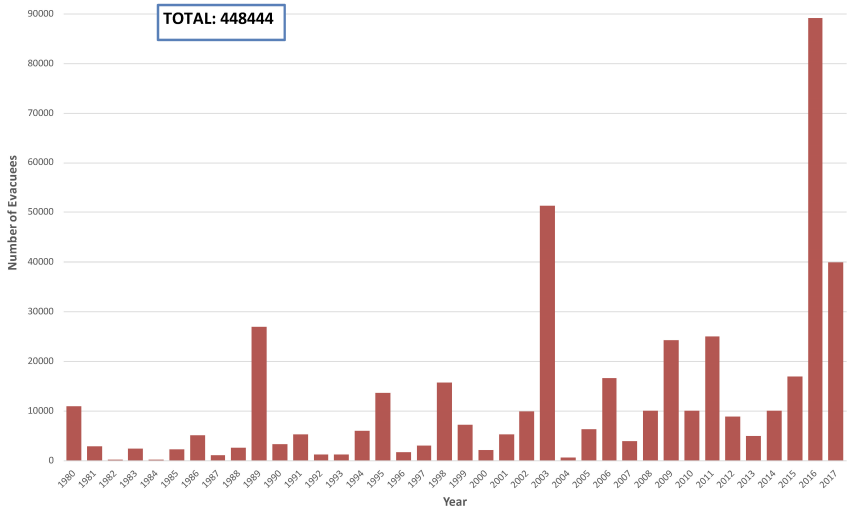

Figure 2: Number of Wildfire Evacuees in Canada 1980-2017.*

Source: Wildland Fire Evacuation Database, Natural Resources Canada.[35] (used with permission)

*N.B. Reporting for 2017 only includes evacuations up to and including July

In a mid-range GHG emissions scenario, wildfires in Canada are projected to rise 75% rise by the end of the 21st century,[36] necessitating a strong adaptive response. Human health impacts of fire include death, trauma, and major burns,[37] anxiety during wildfire periods,[35,38] and post-traumatic stress disorder, anxiety and depression related to evacuations.[39,40] Wildfire smoke also travels vast distances[41] and increases asthma and chronic obstructive pulmonary disease exacerbations, with growing evidence of an association with all-cause mortality.[41] Impacts on health systems can be severe: during the Fort McMurray fire hospital staff evacuated 103 patients in a matter of hours,[10,42] and the 2017 British Columbia wildfires resulted in 700+ staff displaced, 880 patients evacuated, and 19 sites closed by the Interior Health Authority, at a cost of $2.7 million.[12] Such devastating events also generate significant emissions, contributing to climate change, and helping to generate conditions conducive to future blazes.[43]

Much can be done to lessen the health impacts of wildfires. Qualitative data indicates that populations who are better-briefed on the local evacuation plan, as well as ways to lessen the risk of fire to their property, are not only more prepared but also less anxious.[35,38] Building codes can be changed to help keep smoke out, primary care practitioners can ensure vulnerable patients receive at-home air filtration systems and respiratory medications prior to wildfire season,[44] public health professionals can collaborate with municipal officials to maximize smoke forecast-informed outdoor and well-ventilated indoor recreation opportunities,[38] and health personnel can help ensure evacuation plans are clearly communicated.[45]

Sustainable and healthy transport

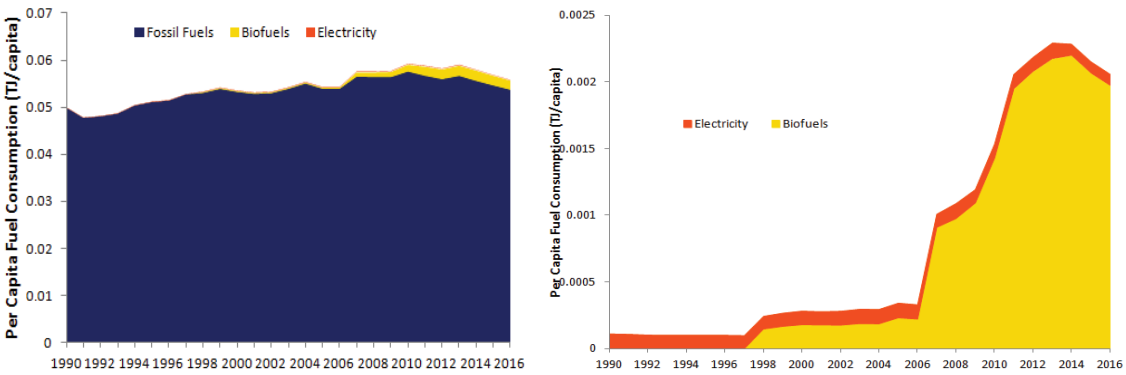

Figure 3: Per Capita Fuel Consumption for Transport in Canada. Source: Lancet Countdown

Transport-related pollution is harming the health of Canadians. Fine particulate matter ($PM_{2.5}$) air pollution related to land-based transportation was responsible for approximately 1063 deaths in 2015 in Canada, resulting in a loss of economic welfare for Canadians valued at approximately $8 billion dollars.[24] Additionally, Canada has the highest pediatric asthma rate amongst countries of comparable income level, with nitrogen dioxide (NO_2) from traffic responsible for approximately 1 in 5 new cases of asthma in children.[46]

With transport responsible for 24% of national GHG emissions in 2017,[31] decarbonizing this sector must be prioritized. Progress is entirely too slow: total fuel consumption for road transport per capita decreased 5.4% from 2013 to 2016. While per capita use of electricity and biofuels for transport increased by 600% since 2000, they account for less than 4% of the energy used in transport (Figure 3). This rate of change is inconsistent with the emissions pathway required to keep today's and future children safe.

Support is therefore required for investments in public transit,[47] and cycling infrastructure,[48] creating win-wins for health by increasing physical activity levels and improving community cohesion, while reducing chronic disease, healthcare costs and GHG emissions.[49,50] Zero emissions vehicles also reduce air pollution and are increasingly affordable: the up-front cost of electric vehicles is forecast to become competitive on an un-subsidized basis from 2024 onwards.[51] British Columbia recently passed legislation requiring all new cars sold to be zero-emission by 2040.[52] Other provinces would benefit from matching this ambition.

Healthcare sector emissions

Though Canadians are proud of the care they provide for one another with this country's system of universal healthcare,[53] Lancet Countdown analysis reveals an area which should give pause to all who endeavor to "do no harm": Canada's healthcare system has the world's third highest emissions per capita.

Previous analysis showed healthcare sector emissions to be responsible for 4.6% of the national total,[54] as well as more than 200,000 tons of other pollutants, resulting in 23,000 disability-adjusted life years (DALYs) lost annually.[54] Emissions from the health sector represent a strategic mitigation target in a single-payer healthcare system straining under the weight of an inexorably increasing burden of disease.

While Canadian healthcare sector emissions are increasing, the world-leading Sustainable Development Unit in England reported an 18.5% decrease in National Health Service, public health and social care system emissions from 2007-2017 despite an increase in clinical activity.[55]

Despite healthcare being a provincial jurisdiction, there is a role for pan-Canadian sustainability initiatives to unite diverse experts spanning public health and the spectrum of clinical disciplines, economics, sustainability science and beyond. This demands health sector-wide education, consistent with existing efforts to increase environmental literacy for health professionals.[56]

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Organisations and acknowledgements

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THE LANCET COUNTDOWN

The Lancet Countdown: Tracking Progress on Health and Climate Change is an international, multi-disciplinary collaboration that exists to monitor the links between public health and climate change. It brings together 35 academic institutions and UN agencies from every continent, drawing on the expertise of climate scientists, engineers, economists, political scientists, public health professionals, and doctors. Each year, the Lancet Countdown publishes an annual assessment of the state of climate change and human health, seeking to provide decision-makers with access to high-quality evidence-based policy guidance. For the full 2019 assessment, visit www.lancetcountdown.org/2019-report .

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