

ASSOCIATION  
MÉDICALE  
CANADIENNE



CANADIAN  
MEDICAL  
ASSOCIATION



CANADIAN  
PUBLIC HEALTH  
ASSOCIATION

ASSOCIATION  
CANADIENNE DE  
SANTÉ PUBLIQUE

The Voice of Public Health  
La voix de la santé publique

# Lancet Countdown 2018 Report: Briefing for Canadian Policymakers

November 2018



# Introduction

Climate change is the biggest global health threat of the 21st century,<sup>1</sup> and tackling it could be our greatest health opportunity.<sup>2</sup> In this era of strained ecological systems, it is clear that our ability to optimize Planetary Health, defined as “the health of human civilization and the natural systems upon which it depends,”<sup>3</sup> will define wellness globally for generations to come.

This briefing, launched in parallel with the 2018 International *Lancet Countdown on Health and Climate Change*, focuses on the links between climate change and health, and their implications for Canadian policymakers. It has been developed in conjunction with the Canadian Medical Association and the Canadian Public Health Association, and draws on data provided by the *Lancet Countdown* to make evidence-informed recommendations.

## Acknowledgements

The concept of this brief was developed by the *Lancet Countdown on Health and Climate Change*. This brief was written by Courtney Howard, MD; Caren Rose, PhD; and Nicholas Rivers, PhD. Scientific review was provided by Peter Berry, PhD and colleagues from Health Canada. Edits and review were provided by (alphabetical): Owen Adams, PhD; Sandra Allison, MD, MPH; Michael Brauer, ScD; Ian Culbert, Ashlee Cunsolo, PhD; Ian Hamilton, PhD; Trevor Hancock MB, BS, MHSc, HonFFPH; Katie Hayes, MA; Margot Parkes, MD, MBChB, MAS, PhD; Kim Perrotta, MSc; Andre Picard; Bora Plumtre, MSc; Robert Rattle, BSc; and Joe Vipond, MD. Contributions and review on behalf of the *Lancet Countdown* were provided by Dr Nick Watts.

## Strategic Partners

THE LANCET



## About the Lancet Countdown

The “*Lancet Countdown: Tracking Progress on Health and Climate Change*” is a global, interdisciplinary research collaboration between 27 academic institutions and inter-governmental organizations. It monitors progress on the relationships between health and climate, and their implications for national governments, reporting annually. The 2018 report presents data on 41 indicators selected following a consultation process in 2017. These span 5 domains, from health impacts and adaptation, to mitigation and the economic and political drivers of response.<sup>2</sup>

## About the Canadian Medical Association

The Canadian Medical Association (CMA) unites physicians on national health and medical matters. Formed in Quebec City in 1867, the CMA’s rich history of advocacy led to some of Canada’s most important health policy changes. As we look to the future, the CMA will focus on advocating for a healthy population and a vibrant profession.

## About the Canadian Public Health Association

The Canadian Public Health Association (CPHA) is a national, independent, non-governmental organization that advances public health education, research, policy and practice in Canada and around the world through the *Canadian Journal of Public Health*, position statements, discussion documents and other resources.

# Recommendations for 2018

---

## Recommendation 1

Coordinate federal governmental departments, local governments and national institutions to standardize surveillance and reporting of heat-related illness and deaths; develop knowledge translation strategies to inform the public about the threat of heatwaves to health; and generate a clinical and public health response plan that minimizes the health impacts of heat now, and anticipates worsening impacts to come as climate change progresses.

---

## Recommendation 2

Rapidly integrate climate change and health into the curriculum of all medical and health sciences faculties.

---

## Recommendation 3

Increase ambition in reducing greenhouse gas emissions and air pollution in Canada and twin this with an emphasis on Just Transition Policies to support an equitable transition for people who work in the fossil fuel industry as the energy economy transforms.

---

## Recommendation 4

Phase out coal-powered electricity in Canada by 2030 or sooner, with a minimum of two thirds of the power replaced by non-emitting sources, and any gap made up by lowest-emitting natural gas technology in a system designed to minimize fugitive methane emissions.

---

## Recommendation 5

Apply carbon pricing instruments as soon and as broadly as possible, enhancing ambition gradually in a predictable manner, and integrate study of resulting air pollution-related health and healthcare impacts into ongoing policy decisions.

---

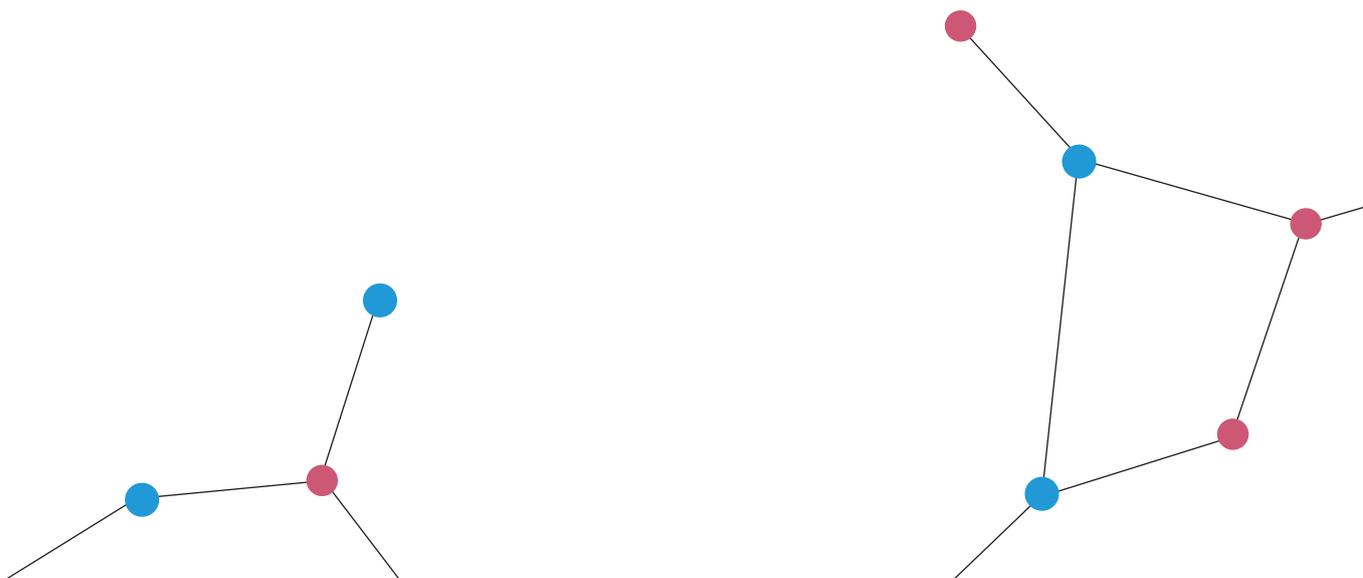
## Recommendation 6

Ensure consistent, pro-active external communications by health-related organizations pointing out the links between climate change and health impacts in real time as events that have been shown to be increasing due to climate change (e.g. heat waves, spread of tick-borne disease, wildfires, extreme weather) occur.

---

## Recommendation 7

Fund increased study into the mental health impacts of climate change and psychosocial adaptation opportunities.



# Key Messages from the 2018 International Lancet Countdown Report

- Present day changes in labour capacity, vector-borne disease, and food security provide early warning of compounded and overwhelming impacts expected if temperature continues to rise. Trends in climate change impacts, exposures, and vulnerabilities demonstrate an unacceptably high level of risk for the current and future health of populations across the world.
- A lack of progress in reducing emissions and building adaptive capacity threatens both human lives and the viability of the national health systems they depend on, with the potential to disrupt core public health infrastructure and overwhelm health services.
- Despite these delays, trends in a number of sectors are breathing life in to the beginning of a low-carbon transition, and it is clear that the nature and scale of the response to climate change will be the determining factor in shaping the health of nations for centuries to come.
- Ensuring a widespread understanding of climate change as a central public health issue will be vital in delivering an accelerated response, with the health profession beginning to rise to this challenge.<sup>2</sup>

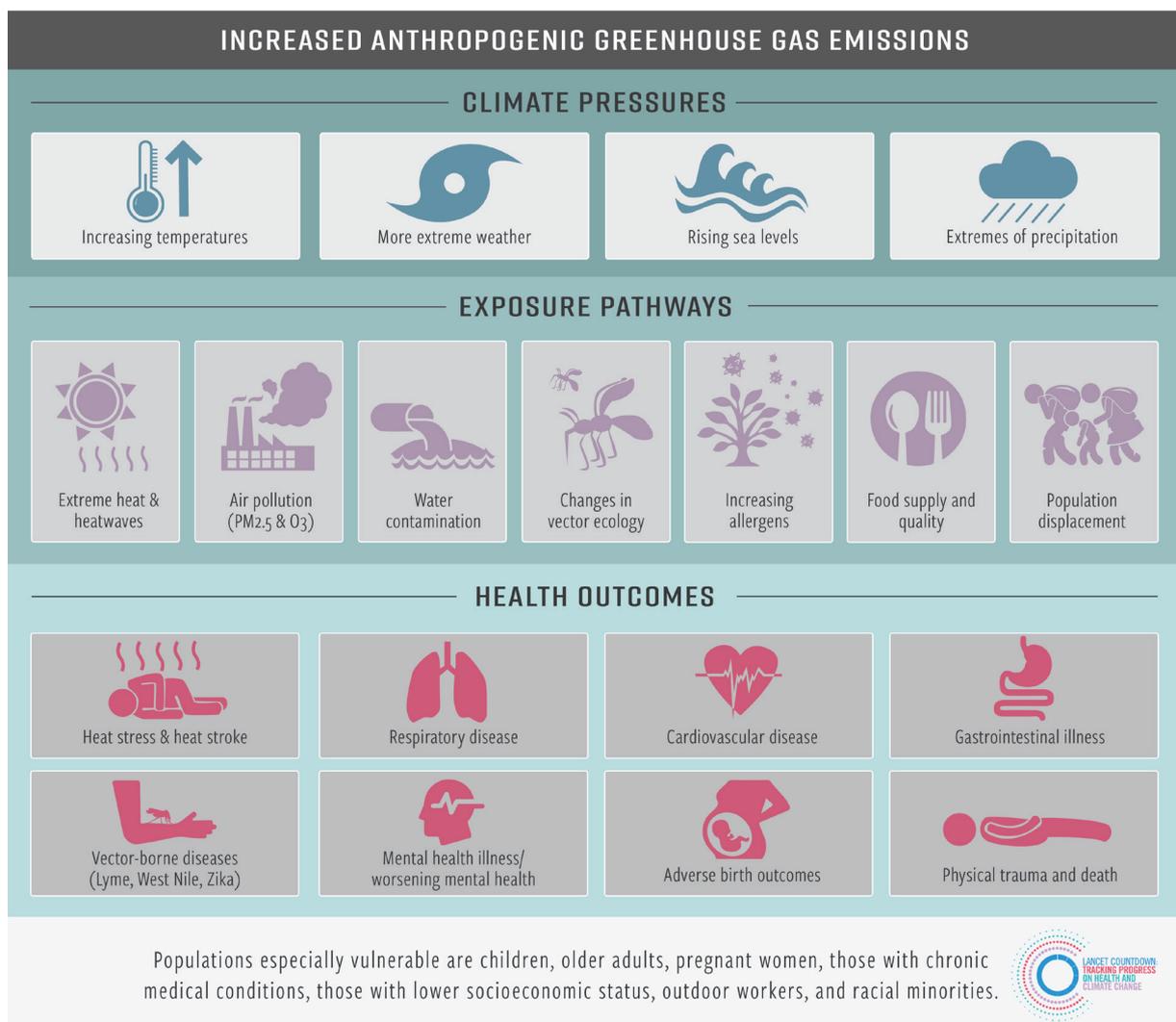


Figure 1: Health Impacts of Climate Change. Credit: M.Lee for the US Lancet Countdown Brief

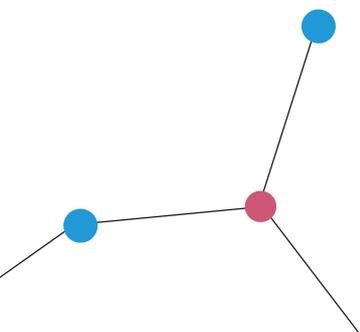
# Overview of the Health Impacts of Climate Change in Canada

Though Canada's well-developed healthcare and public health system provides advantages in terms of initial adaptation to climate change, as a circumpolar country it contains some of the most rapidly-warming areas in the world: observed temperatures in Inuvik, Northwest Territories have increased by 3°C in the past 50 years.<sup>4</sup>

Rapid change in the Arctic is already increasing health risks from food insecurity due to decreased access to traditional foods,<sup>5,6</sup> decreased safety of ice-based travel, and mental health impacts from changed landscapes.<sup>7,8</sup>

Health concerns in the rest of Canada vary by region, but include increased heat stroke and death;<sup>6,9</sup> more intense and prolonged pollen seasons with the potential to cause additional hay fever and asthma exacerbations;<sup>6</sup> trauma, post-traumatic stress disorder and displacement from wildfire and floods;<sup>10-12</sup> spread of Lyme disease;<sup>13,14</sup> cardiorespiratory impacts from worsening air pollution due to wildfires,<sup>15</sup> and increased ground-level ozone.<sup>6</sup>

Milder winters and increased precipitation in parts of the country could potentially improve agricultural yields, and thus reduce food insecurity, but this is balanced by the possibility of crop-damaging severe weather and drought in other areas.<sup>16</sup> There is an increased risk of water-borne disease following changed precipitation patterns, and of greater exposure to higher levels of ultraviolet radiation.<sup>6</sup> The potential for 'tipping cascades' makes the risk of rapid and dramatic climate change impacts more difficult to predict and more likely.<sup>17</sup>



# Heat-Related Health Impacts

## Indicator 1.2 Health Effects of Temperature Change

The health impacts of warmer summers were vividly demonstrated in 2018, with more than 90 people suspected to have died as a direct result of a heat wave in Quebec in July.<sup>18</sup> Health-related impacts of heat include including heat rash, heat edema,<sup>19</sup> heat stress, heat stroke, cardiovascular disease and renal disease.<sup>2</sup> Preliminary evidence has also linked heat with increased suicide risk.<sup>20</sup> Impacts are most common in vulnerable populations such as adults over 65 years, the homeless,<sup>21</sup> urban dwellers and people with pre-existing disease.<sup>2</sup>

Humans around the globe are having to cope with hotter temperatures. The international *Lancet Countdown* report found that in 2017 the mean global summer temperature increase relative to the 1986-2008 reference period was 0.3°C, with the change experienced by humans (i.e., population-exposure-weighted) more than double that, at 0.8°C. This discrepancy results largely from the fact that populations are migrating in to the areas worst affected by climate change.

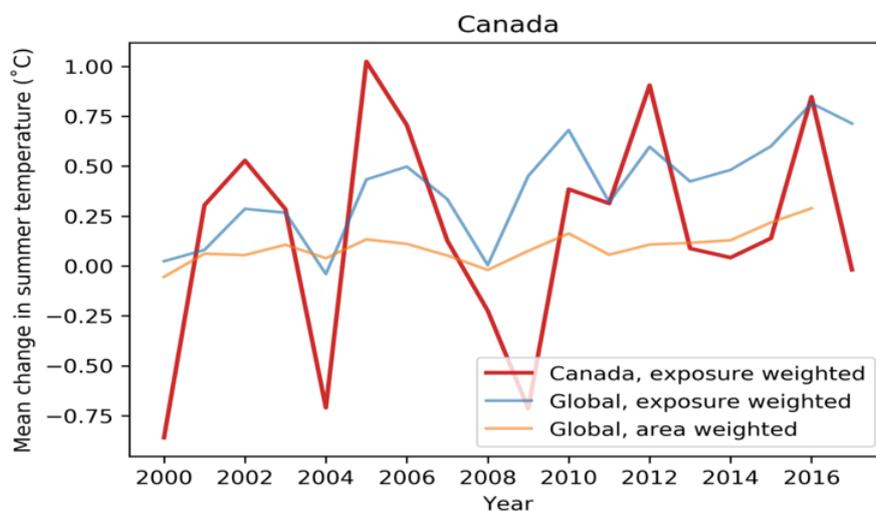


Figure 2: Mean area and population-exposure-weighted summer temperature change in Canada and globally from 2000 to 2017.

As a northern country that must also manage mortality due to cold temperatures,<sup>22,23</sup> health authorities in Canada are now increasing their response to the health risks of extreme heat.<sup>24</sup> Lives can be saved by having integrated surveillance and monitoring systems to gather data on heat-related illness and death, and integrating this into a pro-active public health response.<sup>25</sup> Elements of this include forecasting heat events and ensuring cooperation between public health, emergency management officials and community-members to issue alerts and ensure that vulnerable people such as the elderly have adequate access to water and cool-air shelters.<sup>26</sup> Longer term strategies include creating urban areas rich in green space that minimize the urban heat island effect, and buildings designed with natural ventilation in mind in order to reduce the need for air conditioning,<sup>26</sup> which can lead to increased energy use, and health-harming air pollution.<sup>27</sup>

A well-trained workforce is required to respond to these challenges. The Canadian Public Health Association's Ecological Determinants Group on Education has been working to integrate an eco-social approach into public health education,<sup>28</sup> including facilitating the participation of the Canadian Federation of Medical Students in an International Federation of Medical Students' Associations initiative which seeks to see climate change and health gain a foothold in curricula by 2020 with fuller integration by 2025.<sup>29</sup>

---

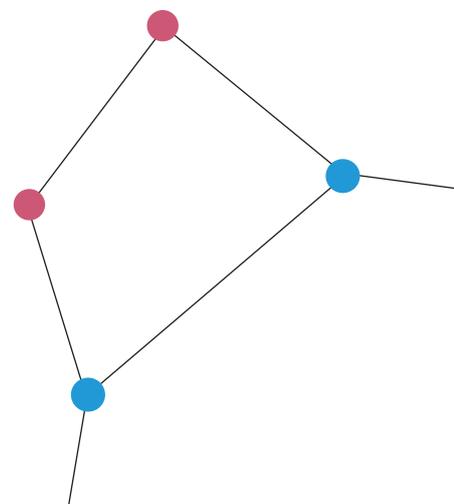
## Recommendation 1

Coordinate federal governmental departments, local governments and national institutions to standardize surveillance and reporting of heat-related illness and deaths; develop knowledge translation strategies to inform the public about the threats of heatwaves to health; and generate a clinical and public health response plan that minimizes the health impacts of heat now and anticipates worsening impacts to come as climate change progresses.

---

## Recommendation 2

Rapidly integrate climate change and health into the curriculum of all medical and health sciences faculties.



# Health Costs of Energy and Air Pollution

## Towards a healthier, low-carbon world.

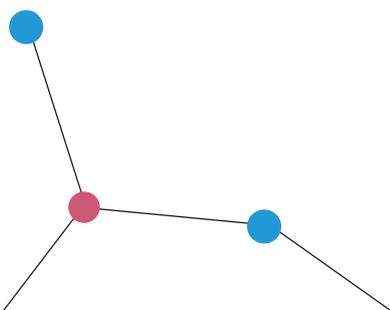
Canada is not doing its fair share to reduce greenhouse gas (GHG) emissions. In 2016, Canadian emissions were 704 MT CO<sub>2</sub>eq, an actual *increase* of over one hundred megatonnes since 1990.<sup>30</sup> In contrast, the United Kingdom reduced its greenhouse gas emissions 41% between 1990 and 2016,<sup>31</sup> and China is hitting its greenhouse gas targets ahead of schedule.<sup>32</sup> The 2017 Canadian Federal Auditor General's report estimated that emissions in 2020 are projected to be 111 MT CO<sub>2</sub>eq above Canada's 2020 target of 620 MT CO<sub>2</sub>eq.<sup>33</sup> In 2016, the Canadian transportation sector accounted for 25% of total national emissions, while the oil and gas sector accounted for 26% of total national emissions, having gone up 70% from 107 Mt CO<sub>2</sub>eq in 1990 to 183 Mt CO<sub>2</sub>eq in 2016, an increase that is mostly attributable to higher levels of production of crude oil and the expansion of the oil sands industry.<sup>30</sup>

Business-as-usual emissions trajectories currently have the world on course to 2.6-4.8°C of warming by 2100.<sup>34</sup> As the 2018 *Lancet Countdown* states, "present day changes in labour capacity, vector-borne disease, and food security provide early warning of compounded and overwhelming impacts expected if temperature continues to rise. Trends in climate change impacts, exposures, and vulnerabilities demonstrate an unacceptably high level of risk for the current and future health of populations across the world."<sup>2</sup>

In an effort to alter course, in December 2015, 195 countries, including Canada, signed the Paris Agreement, which pledges to keep the global mean temperature rise to well below 2°C. A recent report by the Intergovernmental Panel on Climate Change underlines the health benefits of keeping warming to 1.5°C,<sup>13</sup> but makes clear the magnitude of that challenge, stating, "global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate."<sup>35</sup> It finds that in order to stay below 1.5°C, "global net human-caused emissions of carbon dioxide (CO<sub>2</sub>) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050."<sup>35</sup>

There are signs of progress: the 2018 *Lancet Countdown* reports that in 2017 there were 157 Gigawatts (GW) of new installed renewable energy, as compared to 70 GW of fossil fuel capacity; a 50% increase in the uptake of electric vehicles across the global rolling stock; and a cumulative total of \$33.6 billion USD now divested of fossil fuels by health institutions.<sup>2</sup>

Many policies that reduce greenhouse gas emissions also decrease air pollution, resulting in immediate benefits to health and healthcare cost savings, as described in the next section.



## Indicator 3.5.2 Premature Mortality from Air Pollution by Sector

**Headline Finding:** Data for Canada provided by the *Lancet Countdown* shows a total of 7142 deaths from chronic exposure to anthropogenic PM<sub>2.5</sub> air pollution in 2015, (Figure 3) resulting in a loss in economic welfare for Canadians valued at approximately \$53.5 billion.<sup>36</sup>

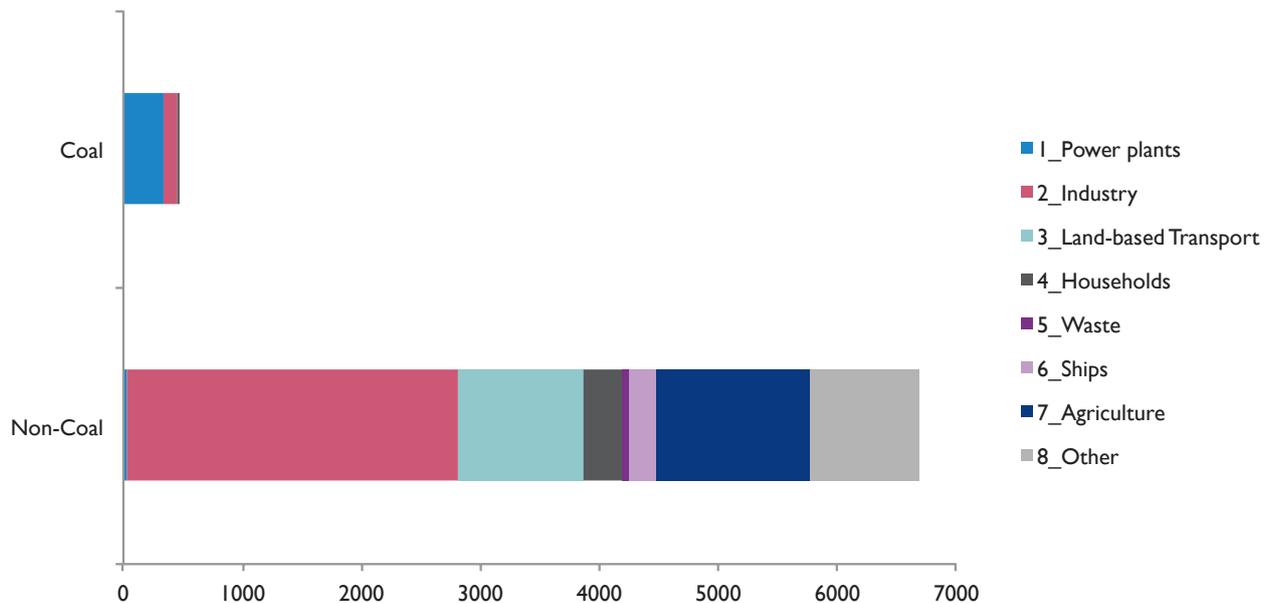


Figure 3: Annual Premature Deaths from Ambient PM<sub>2.5</sub> in Canada

The 2018 International *Lancet Countdown* report found that fine particulate ambient air pollution (PM<sub>2.5</sub>) resulted in more than 2.9 million deaths globally in 2015, with coal responsible for about 16% of this.<sup>2</sup> These numbers are based on chronic exposure and include deaths from ischemic heart disease, stroke, lung cancer, acute lower respiratory infections and COPD.

Health Canada estimated in 2017 that 9,500 deaths per year in Canada are attributable to above-background concentrations of PM<sub>2.5</sub>.<sup>37</sup> A 2016 report by the World Bank showed 9,466 deaths in Canada in 2013 due to PM<sub>2.5</sub> with direct welfare costs of US\$40.4 billion (2011 prices).<sup>38</sup> This analysis by the *Lancet Countdown* showed 7142 deaths including 345 deaths from coal-fired power plants; another 105 from coal-related industries; 2,762 deaths from non-coal industry; 1063 from Land-based Transport; and 1282 from Agriculture.<sup>2</sup> Using official Health Canada methodologies, this translates into a loss in economic welfare for Canadians valued at approximately \$53.5 billion.<sup>36</sup>

In addition to its air-pollution-mediated mortality impacts, in 2016 the Canadian transportation sector accounted for 25% of national GHG emissions.<sup>30</sup> The 2017 *Lancet Countdown* Briefing for Canadian Policymakers showed that Canada has quite a low proportion of trips taken via means of sustainable transport including by transit, bike or on foot,<sup>39</sup> and recommended the development of a National Active Transport Strategy.<sup>39</sup> Multiple health benefits would stem from this: exercise reduces anxiety<sup>40</sup> and depression;<sup>41</sup> commuting on foot or by bike has been shown to decrease cardiovascular mortality, and cycling decreases all-cause mortality and mortality from cancer.<sup>42</sup>

To reduce coal-related morbidity, mortality, and greenhouse gas emissions, the Government of Canada has committed to an accelerated phase out of unabated coal-fired power by 2030.<sup>43</sup> As per the Regulatory Impact Analysis Statement of the proposed amendment to existing legislation on GHGs from coal-fired generation, the expected resulting reduction in cumulative GHG emissions is approximately 100Mt,<sup>44</sup> with \$3.6 billion in avoided climate change damage benefits, and \$1.3 billion in health and environmental benefits from air quality improvement.<sup>44</sup> The Pembina Institute previously

estimated health benefits of \$5 billion in a scenario where coal-fired plants are shut down after 40 years of operation or by 2030, and which assumes the replacement of coal power by two thirds renewables and one third best-in-class gas-power.<sup>45</sup>

A transition which proceeds as much as possible directly from coal-fired to renewably-generated electricity is required. Methane, the primary component of natural gas, has 84 times the GHG potential of CO<sub>2</sub> over a twenty year period,<sup>46</sup> and the upstream extraction and transport system is leaky,<sup>47-49</sup> leading to near-term warming risks. Additionally, an increasing proportion of natural gas in Canada is being produced via hydraulic fracturing,<sup>50</sup> for which evidence is accumulating of negative impacts: a quantitative assessment of the peer-reviewed scientific evidence from 2009-2015 indicated that 84% of studies on public health, 69% of studies on water and 87% of studies on air quality showed concerning findings.<sup>51</sup>

Encouragingly, Canada's coal phase-out commitments enabled the Canadian Government to join forces with the United Kingdom at COP23 to launch the Powering Past Coal Alliance, which now has at least 60 national, provincial, state, city, business and organizational members.<sup>52</sup> In Canada, a Just Transition Task Force has been created to support coal workers as they move towards new employment.<sup>53</sup> This important initiative would do well to expand to support the social determinants of health of fossil-fuel-industry workers across Canada as the nation transforms its energy economy.

---

## Recommendation 3

Increase ambition in reducing greenhouse gas emissions and air pollution in Canada and twin this with an emphasis on Just Transition Policies to support an equitable transition for people who work in the fossil fuel industry as the energy economy transforms.

---

## Recommendation 4

Phase out coal-powered electricity in Canada by 2030 or sooner, with a minimum of two thirds of the power replaced by non-emitting sources, and any gap made up by lowest-emitting natural gas technology in a system designed to minimize fugitive methane emissions.

# Financial and Economic Drivers of a Low-Carbon Transition

## Indicator 4.7 Coverage and Strength of Carbon Pricing

This section co-authored by Nicholas Rivers, Canada Research Chair in Climate and Energy Policy.

**Headline Finding:** When the Chinese National Emissions Trading Scheme comes online this year, approximately 20% of global anthropogenic GHG emissions will be subject to a carbon price.<sup>2</sup>

The 2015 Lancet Commission on Climate Change and Health stated, “The single most powerful strategic instrument to inoculate human health against the risks of climate change would be for governments to introduce strong and sustained carbon pricing, in ways pledged to strengthen over time until the problem is brought under control. Like tobacco taxation, it would send powerful signals throughout the system, to producers and users, that the time has come to wean our economies off fossil fuels, starting with the most carbon intensive and damaging like coal.”<sup>54</sup> On the basis of this argument, the Canadian Medical Association passed a motion at its General Council in 2015 to “promote the health benefits of a strong, predictable price on carbon emissions.”<sup>55</sup>

News of increasing carbon pricing coverage internationally comes at a critical juncture for Canada. Carbon prices currently apply to 75% of greenhouse gas emissions in British Columbia, 72% in Alberta, 84% in Ontario, and 81% in Quebec, such that in total 61% of emissions in Canada are subject to a carbon price (42% after Ontario’s proposed cap-and-trade elimination).<sup>56</sup>

The federal carbon pricing backstop is due to come into effect in 2019. It will start at a minimum of \$10 per tonne in 2018, and rise by \$10 per year to \$50 per tonne in 2022.<sup>57</sup> Successful application of the federal carbon pricing backstop in 2019 will result in coverage of 79% of total Canadian emissions by a carbon price.<sup>56</sup> The current plan will be revenue-neutral at the federal level, with all proceeds staying in the province in which they were collected.<sup>58</sup> About 70% of Canadians will receive as much or more back in rebates as what they paid.<sup>58</sup>

A review of studies of BC’s carbon tax showed that it has reduced emissions in the province by 5-15% compared to what they would have been without the tax, and that the tax has had negligible effects on aggregate economic performance.<sup>59</sup> Similar reductions in emissions in response to carbon prices have been found in other jurisdictions.<sup>60,61</sup>

A neglected part of the public conversation is the impact carbon pricing could have on human health, via decreases in the air-pollution-related deaths detailed in section 3.5.2. A study in the US found that “monetized human health benefits associated with air quality improvements can offset 26-1050% of the cost of US carbon policies.”<sup>62</sup> Similarly, a recent study from China which simulated the impact of a price on CO<sub>2</sub> emissions consistent with China’s pledge to reach a peak in CO<sub>2</sub> emissions by 2030, found that “national health co-benefits from improved air quality would partially or fully offset policy costs depending on chosen health valuation.”<sup>63</sup> There is a critical need to carry out similar studies in the Canadian context.

---

## Recommendation 5

Apply carbon pricing instruments as soon and as broadly as possible, enhancing ambition gradually in a predictable manner, and integrate study of resulting air pollution-related health and healthcare impacts into ongoing policy decisions.

## Indicator 5.1 Media Coverage of Health and Climate Change

**Headline Finding:** Against a backdrop of a 42% global increase in media coverage between 2007 and 2017, the average aggregate number of articles per year referencing both climate change and health in 3 Canadian Newspapers (The Globe and Mail, The Toronto Star, and The National Post) dropped 24% from 98 in 2009 to 75 in 2017. (Data courtesy of the *Lancet Countdown*)

Media coverage is critical for helping populations become aware of the risks of climate change, and in influencing public support for national policy change.<sup>64</sup> Research shows that presenting climate change in a health frame, as opposed to as an environmental or security issue, is the best way to elicit emotional reactions consistent with support for climate change mitigation and adaptation,<sup>65</sup> and that more strongly positive reactions are associated with information about the health benefits of mitigation policy (e.g. the number of asthma exacerbations that will be saved as a result of the phase-out of a coal-fired power plant) than with information about health risks.<sup>66</sup>

A 2017 poll commissioned by Health Canada demonstrates quite a high level of public concern related to climate change: 79% of Canadians are convinced that climate change is happening, and of these, 53% accept that it is a current health risk, and 40% believe it will be a health risk in the future.<sup>67</sup>

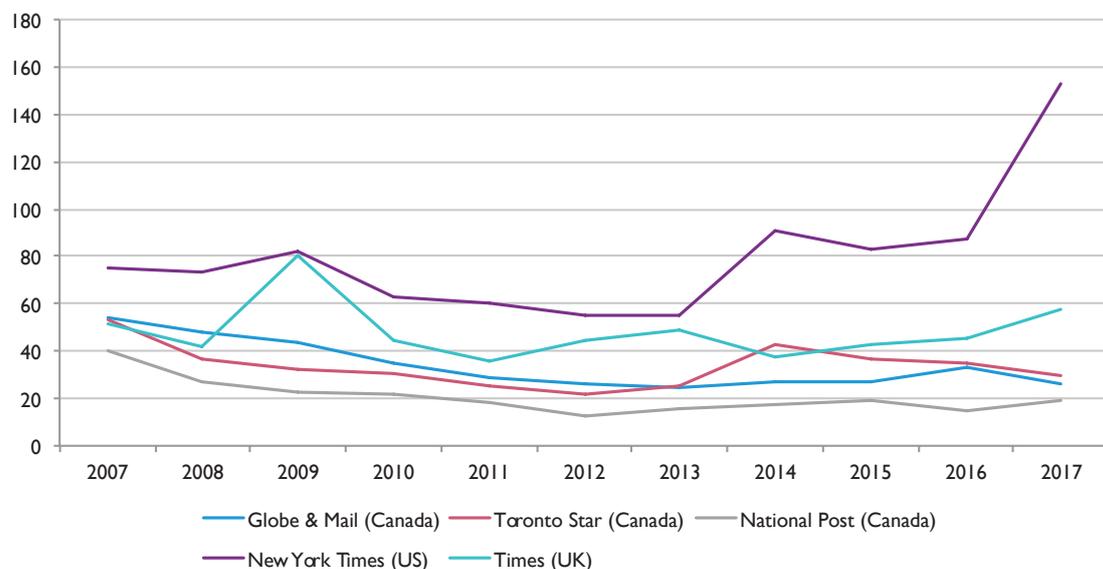


Figure 4: Number of articles in specific newspapers covering Climate Change and Health. Data provided by the *Lancet Countdown*.<sup>2</sup>

The three Canadian newspapers in the dataset, *The Globe and Mail*, *The Toronto Star*, and *The National Post*, each saw a drop in climate change and health coverage, with the average number of articles per year in Canada decreasing 24% from 98 in 2009 to 75 in 2017. In contrast, over the same period, the New York Times saw an increase of 86%. (Figure 4)

## Recommendation 6

Ensure consistent, pro-active external communications by health-related organizations pointing out the links between climate change and health impacts in real time as events which have been shown to be increasing due to climate change (e.g. heat waves, spread of tick-borne disease, wildfires, extreme weather) occur.

# Case Study: Canadian Contributions to Understanding of Climate Change, Mental Health and Ecological Grief

Climate-related weather events and environmental change have been linked to elevated rates of depression, anxiety, and pre-and-post-traumatic stress; increased drug and alcohol usage; and increased suicidal ideation, suicide attempts and death by suicide.<sup>68</sup> As a result, mental health considerations are likely to be increasingly included in climate vulnerability and impact assessments.<sup>69</sup> Research in Canada has particularly contributed to the evolution of concepts such as “solastalgia,” explained as ‘feeling homesick when you’re still at home,’ ecological grief and eco-anxiety.<sup>68</sup>

Canada’s Arctic is one of the most rapidly-warming areas on earth, and has been inhabited for millennia by Indigenous communities whose close connection to and knowledge of the land make them sensitive observers of ecological change. A multi-year, community-driven enquiry into the mental health impacts of environmental change in the community of Rigolet, Nunatsiavut, demonstrated that climate change is “negatively affecting feelings of place attachment by disrupting hunting, fishing, foraging, trapping, and traveling, and changing local landscapes--changes which subsequently impact physical, mental, and emotional health and well-being.” These results called for an understanding of place-based attachment as a vital indicator of health and well-being.<sup>7</sup>

Southwest of Rigolet, in the high subarctic area surrounding the Northwest Territories’ capital of Yellowknife, the “SOS-Summer of Smoke” project investigated the health and wellness impacts of a prolonged smoke and fire exposure in 2014.<sup>11</sup> It found double the normal rates of emergency department visits for asthma, and interview analysis revealed strong themes of isolation, fear, loss of connection to the land and to traditional summertime activities; lack of physical activity; and a feeling of ecological grief or eco-anxiety, as participants placed the summer in the overall context of the changing climate and wondered if such summers would become the “new normal.”<sup>11</sup>

A recent paper in *Nature Climate Change* defined ecological grief as, “the grief felt in relation to experienced or anticipated ecological losses.”<sup>68</sup> It points out that, “grief is a natural and legitimate response to ecological loss, and one that may become more common as climate impacts worsen.”<sup>68</sup>

Both the SOS study and the paper on ecological grief were published in spring 2018, just prior to one of western Canada’s most severe wildfire seasons on record. As millions of Canadians sat blanketed in smoke, media interest in the concepts of solastalgia and ecological grief was unprecedented,<sup>12,70</sup> opening up new discussions that, at the very least, decrease people’s feelings of loneliness in their grief. Grief and mourning has “we-creating” capacities, allowing for opportunities to reach across differences to connect with others.<sup>68</sup> Though difficult, these conversations may well create new possibilities in the pursuit of a healthy approach to climate change.

---

## Recommendation 7

Fund increased study into the mental health impacts of climate change and psychosocial adaptation opportunities.

# Follow-up on Recommendations from the 2017 Lancet Countdown Briefing for Canadian Policymakers

---

## Policy Recommendation #1

Ensure funding of research and best practice information sharing between public health communities in different regions to fine tune adaptation capacity to severe weather events.

Health Canada recently launched a multi-year funding program to support approximately 10 projects and begin a Community of Practice to help the health sector develop vulnerability and adaptation assessments. The Public Health Agency of Canada also has an Infectious Disease and Climate Change Fund, and Indigenous Services has developed "Canada's Climate Change and Health Adaptation Program for First Nations South of 60°."<sup>71</sup>

---

## Policy Recommendation #2

Phase out coal-powered electricity in Canada by 2030 or sooner, with a minimum of two thirds of the power replaced by non-emitting sources, and any gap made up by lowest-emitting natural gas technology. Track and cost the health benefits of the transition in Canada and globally.

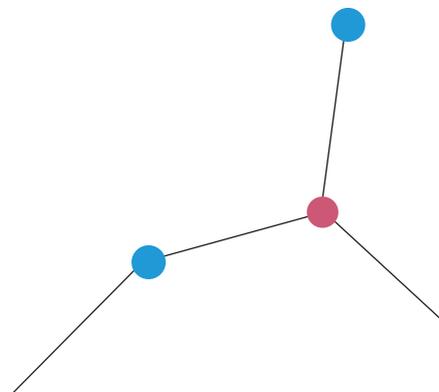
Current situation described above in air pollution section.

---

## Policy Recommendation #3:

Develop a National Active Transport Strategy for Canada to coordinate improvements to walking, cycling and transit environments. This should receive priority funding, with healthcare cost savings calculated in order to demonstrate the cost offset of the investments.

A NGO-led campaign requesting a national active transport strategy has now been endorsed by over 150 health, environmental and community organizations.<sup>72</sup>



---

## Policy Recommendation #4

Enhance support for tele-commuting and telehealth options. Within health systems, gather and analyze data on kilometers, greenhouse gas emissions, air pollution and costs saved by telehealth in order to help drive systems change.

Various jurisdictions are investing in Telehealth, including the Northwest Territories, which increased the ability for emergency physicians to conduct video-based consultations on remote patients. Virtual medicine is a growing focus of Joule, the Canadian Medical Association's service and innovation arm.<sup>73</sup>

---

## Policy Recommendation #5

Provide strong health-sector support for Health Canada's draft healthy eating guidelines, which emphasize plant-based sources of protein, with framing of these guidelines as being beneficial for both human and planetary health.

The 1st launch of the revamped Canada Food Guide will occur in late fall 2018.<sup>74</sup> The Food Guide is expected to maintain the emphasis on plant-based proteins that was presented in its draft version.

---

## Policy Recommendation #6

Increase funding for research into the local health impacts of resource extraction, with a focus on impacts on Indigenous populations.

A September 2018 search of the Canadian Research Information database pulled up only 2 funded studies with the search term, "hydraulic fracturing," and 9 with "resource development" referring to natural resources. The BC Observatory for Population and Public Health and Northern Health recently released a report summarizing impacts of resource extraction and development on the social determinants of health in rural, remote and Indigenous communities.<sup>75</sup>

---

## Policy Recommendation #7

Integrate Health Impact Assessments as a core component of the federal Environmental Assessment process.

In February 2018, the Government of Canada introduced new legislation to move to a more holistic Impact Assessment process for major development project approvals that includes consideration of economic, social and health effects including earlier and improved participation opportunities for Indigenous and non-Indigenous communities, consideration of traditional and community knowledge, gender-based analysis and a strong focus on sustainability.<sup>76</sup>

# References

1. Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R, et al. Managing the health effects of climate change: Lancet and University College London Institute for Global Health Commission. *Lancet* 2009;373(9676):1693-733.
2. Watts N, Ammann M, Arnell N, Ayeb-Karlsson S, Belesova K, et al. The 2018 Report of The Lancet Countdown on Health and Climate Change. *The Lancet* 2018.
3. Whitmee S, Haines A, Beyrer C, Boltz F, Capon AG, de Souza Dias BF, et al. Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation-Lancet Commission on planetary health. *Lancet* 2015;386(10007):1973-2028.
4. Government of the Northwest Territories. Climate Observations in the Northwest Territories (1957-2012) Inuvik \* Norman Wells \* Yellowknife \* Fort Smith.
5. Rosol R, Powell-Hellyer S, Chan HM. Impacts of decline harvest of country food on nutrient intake among Inuit in Arctic Canada: impact of climate change and possible adaptation plan. *Int J Circumpolar Health* 2016;75(1):31-47.
6. Berry P, Clarke K, Fleury MD, Parker S. Human Health; in from Impacts to Adaptation: Canada in a Changing Climate. Natural Resources Canada; 2014.
7. Cunsolo Willox A, Harper SL, Ford JD, Landman K, Houle K, Edge VL, et al. "From this place and of this place:" climate change, sense of place, and health in Nunatsiavut, Canada. *Soc Sci Med* 2012;75(3):538-47.
8. Health A. Impact of Wildfires on the Mental Health of Fort McMurray Residents: Neurotic Disorders, Daily Physician Visits within an Emergency Department 2015 vs. 2016. Alberta Health, Health Standards, Quality and Performance Division, Analytics and Performance Reporting Branch; 2016.
9. Toronto Public Health. A Climate of Concern: Climate Change and Health Strategy for Toronto 2015. 2015.
10. Cherry N, Haynes W. Effects of the Fort McMurray wildfires on the health of evacuated workers: follow-up of 2 cohorts. *CMAJ Open* 2017;5(3):E638-E45.
11. Dodd W, Scott P, Howard C, Rose C, Scott C, Cunsolo A, et al. Lived experience of a record wildfire season in the Northwest Territories, Canada. Accepted by *Canadian Journal of Public Health* 2018.
12. McCue D. Growing 'ecological grief' is the mental health cost of climate change. 2018 [October 26, 2018]; Available from: <https://www.cbc.ca/radio/checkup/growing-ecological-grief-is-the-mental-health-cost-of-climate-change-1.4871666>
13. Ebi K, Campbell-Lendrum D, Wyns A. The 1.5 Health Report--Synthesis on Health and Climate Science in the IPCC SR1.5. 2018 2018.

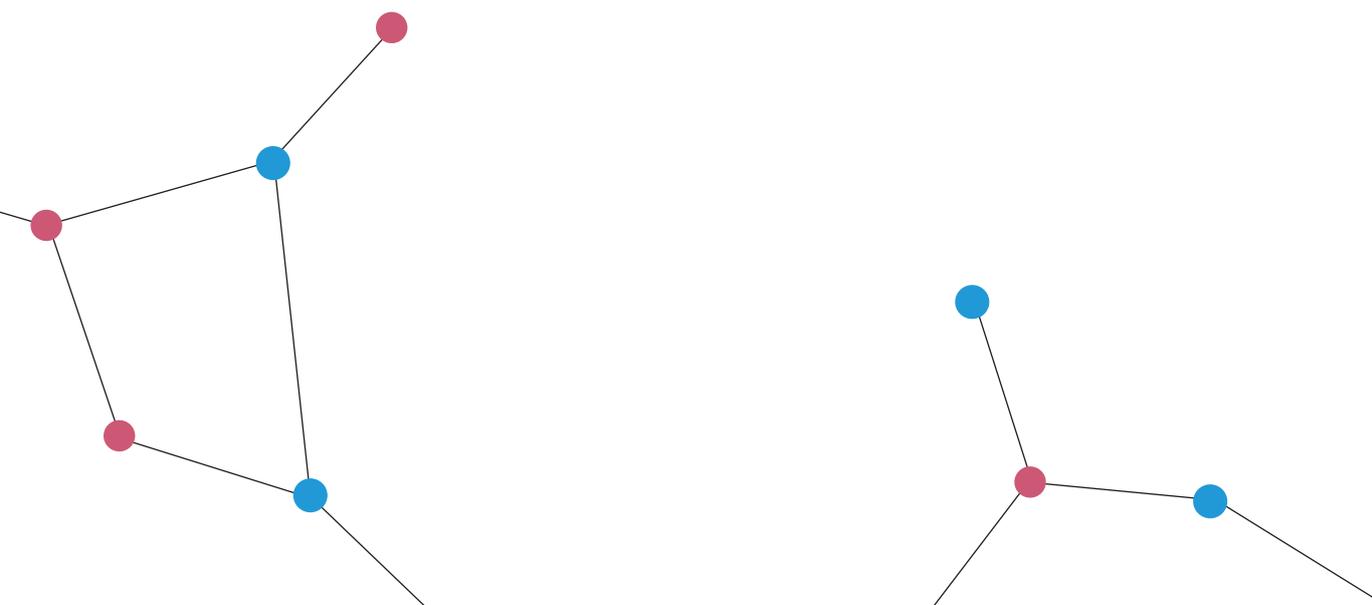
14. Ogden NH, St-Onge L, Barker IK, Brazeau S, Bigras-Poulin M, Charron DF, et al. Risk maps for range expansion of the Lyme disease vector, *Ixodes scapularis*, in Canada now and with climate change. *Int J Health Geogr* 2008;7:24.
15. Henderson SB, Johnston FH. Measures of forest fire smoke exposure and their associations with respiratory health outcomes. *Curr Opin Allergy Clin Immunol* 2012;12(3):221-7.
16. Government of Canada. Impact of climate change on Canadian agriculture. 2015-07-30 [Oct 22, 2017]; Available from: <http://www.agr.gc.ca/eng/science-and-innovation/agricultural-practices/agriculture-and-climate/future-outlook/impact-of-climate-change-on-canadian-agriculture/?id=1329321987305>
17. Steffen W, Rockström J, Richardson K, Lenton T, Folke C, et al. Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Science* 2018.
18. Woods A. More than 90 deaths now linked to heat wave in Quebec. 2018. [cited July 18, 2018]. Available from: <https://www.thestar.com/news/canada/2018/07/18/89-deaths-now-linked-to-heat-wave-in-quebec.html>.
19. Dover G, P.E, Gould R, Hayes J, Kenny G, Moore K, et al. Extreme Heat Events Guidelines: Technical Guide for Health Care Health Canada; 2018 2018-08-07.
20. Thompson R, Hornigold R, Page L, Waite T. Associations between high ambient temperatures and heat waves with mental health outcomes: a systematic review. *Public Health* 2018;161:171-91.
21. Ramin B, Svoboda T. Health of the homeless and climate change. *J Urban Health* 2009;86(4):654-64.
22. Gasparrini A, Guo Y, Hashizume M, Lavigne E, Zanobetti A, Schwartz J, et al. Mortality risk attributable to high and low ambient temperature: a multicountry observational study. *Lancet* 2015;386(9991):369-75.
23. Chen H, Wang J, Li Q, Yagouti A, Lavigne E, Foty R, et al. Assessment of the effect of cold and hot temperatures on mortality in Ontario, Canada: a population-based study. *CMAJ Open* 2016;4(1):E48-58.
24. Guilbault S, Kovacs P, Berry P, Richardson G, Friedel N, Rogaeva A, et al. Cities adapt to extreme heat: celebrating local leadership. Health Canada Institute for Catastrophic Loss Reduction; 2016.
25. World Health Organization. Operational framework for building climate resilient health systems. 2015.
26. Brown C, Chiotti Q, Davidson L, Dubous N, Hamel S, Hirst S, et al. Health Canada: Communicating the Health Risks of Extreme Heat Events. 2018 Aug 7, 2018.
27. Abel DW, Holloway T, Harkey M, Meier P, Ahl D, Limaye VS, et al. Air-quality-related health impacts from climate change and from adaptation of cooling demand for buildings in the eastern United States: An interdisciplinary modeling study. *PLoS Med* 2018;15(7):e1002599.

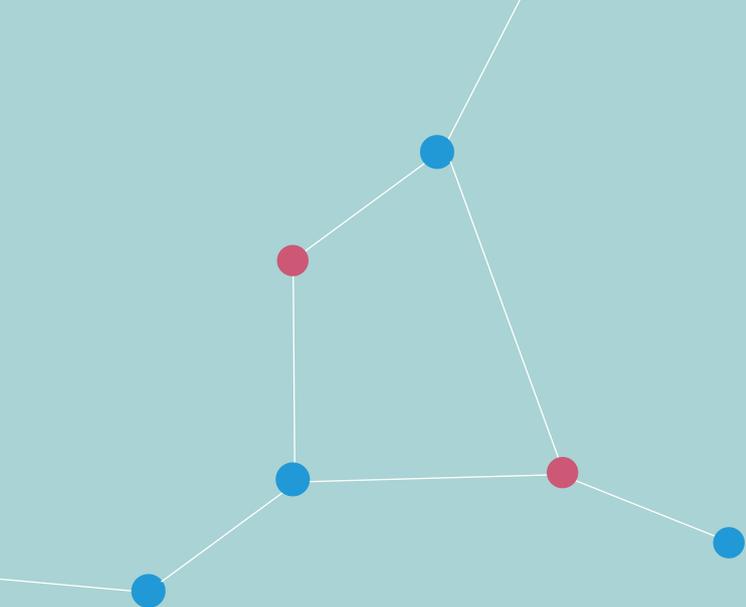
28. Canadian Public Health Association. Ecological Determinants of Health Group on Education. 2018 [cited 2018 October 25, 2018]; Available from: <https://www.cpha.ca/EDGE>
29. International Federation of Medical Students' Associations. 2020 Vision for Climate-Health in Medical Curricula. 2018 [cited 2018 October 9, 2018]; Available from: <https://docs.google.com/forms/d/e/1FAIpQLSeMxig6Yhs4qjU8oboKXm0KqGXRj64fcs08o9IHBikNGX5RYA/viewform>
30. Canada Go. Greenhouse Gas Emissions. 2018 [June 13, 2018.]; Available from: <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html>
31. United Kingdom National Statistics. 2016 UK Greenhouse Gas Emissions. 2018 [cited 2018 October 9 2018]; Available from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/679334/2016\\_Final\\_Emissions\\_Statistics\\_one\\_page\\_summary.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/679334/2016_Final_Emissions_Statistics_one_page_summary.pdf)
32. Qi Y, Stern N, He J, Lu J, King D, Lin T, et al. China's Peaking Emissions and the Future of Global Climate Policy. Brookings-Tsinghua Center for Public Policy; 2018.
33. Government of Canada. 2017 Fall Reports of the Commissioner of the Environment and Sustainable Development to the Parliament of Canada. Report 1—Progress on Reducing Greenhouse Gases—Environment and Climate Change Canada. 2017.
34. Intergovernmental Panel on Climate Change. Summary for Policymakers: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [(eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.; 2013.
35. Intergovernmental Panel on Climate Change. Global Warming of 1.5C--Summary for Policymakers. 2018 October 8, 2018.
36. Chestnut L, De Civita P. Economic valuation of mortality risk reduction : review and recommendations for policy and regulatory analysis. 2009.
37. Health Canada. Health Impacts of Air Pollution in Canada--an Estimate of Premature Mortalities. 2017.
38. Narain U, Sall C, Brauer M, Cohen A, Estep K, Forouzanfar M, et al. The Cost of Air Pollution: Strengthening the Economic Case for Action. World Bank and Institute of Health Metrics and Evaluation.; 2016.
39. Howard C, Rose C, Hancock T. Lancet Countdown 2017 Report: Briefing for Canadian Policymakers. Lancet Countdown and Canadian Public Health Association; 2017 October 31st, 2017.
40. de Souza Moura AM, Lamego MK, Paes F, Ferreira Rocha NB, Simoes-Silva V, Rocha SA, et al. Effects of Aerobic Exercise on Anxiety Disorders: A Systematic Review. CNS Neurol Disord Drug Targets 2015;14(9):1184-93.
41. Wegner M, Helmich I, Machado S, Nardi AE, Arias-Carrion O, Budde H. Effects of exercise on anxiety and depression disorders: review of meta- analyses and neurobiological mechanisms. CNS Neurol Disord Drug Targets 2014;13(6):1002-14.

42. Celis-Morales CA, LD, Welsh PI, Anderson J2, Steell LI, Guo Y1, Maldonado RI, Mackay DF2, Pell JP2, Sattar NI, Gill JMR3. Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study. *British Medical Journal* 2017;357(j1456. ).
43. Government of Canada. Powering our future with clean energy. 2016 [updated 2016-12-09; cited 2017 October 5]; Available from: <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/clean-energy.html>
44. Government of Canada. REGULATORY IMPACT ANALYSIS STATEMENT: Regulations Amending the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations. Department of the Environment and Department of Health,; 2018 Feb 17, 2018.
45. Israël B, E. F. Out With the Coal, in With the New: National benefits of an accelerated phase-out of coal-fired power. Pembina Institute; 2016.
46. Intergovernmental Panel on Climate Change. IPCC 2014; Climate Change 2014 Synthesis Report; Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Switzerland.: Intergovernmental Panel on Climate Change; 2014.
47. Government of Canada. Canada's methane regulations for the upstream oil and gas sector. Environment and Natural Resources,; 2018 [cited 2018 Oct 24, 2018]; Available from: <https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/proposed-methane-regulations-additional-information.html>
48. Balcombe P, Anderson K, Speirs J, Brandon N, Hawkes A. The Natural Gas Supply Chain: The Importance of Methane and Carbon Dioxide Emissions. *ACS Sustainable Chem. Eng.* 2017;5:3-20.
49. Atherton E, Risk D, Fougere C, Lavoie M, Marshall A, Werring J, et al. Mobile measurement of methane emissions from natural gas developments in Northeastern British Columbia, Canada. *Atmos. Chem. Phys. Discuss.* 2017.
50. Government of Canada. Environmental Considerations of Shale and Tight Resource Development. 2016.
51. Hays J, Shonkoff SB. Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015. *PLoS One* 2016;11(4):e0154164.
52. Government of the United Kingdom. Powering Past Coal Alliance: Partners. 2018.
53. Government of Canada. Just transition task force. 2018.
54. Watts N, Adger WN, Agnolucci P, Blackstock J, Byass P, Cai W, et al. Health and climate change: policy responses to protect public health. *Lancet* 2015;386(10006):1861-914.
55. Association CM. Resolutions Passed at General Council 2015 (confirmed). 2015.
56. Dobson S, Winters J, Boyd B. The greenhouse gas emissions coverage of carbon pricing instruments for Canadian provinces. University of Calgary; 2018.

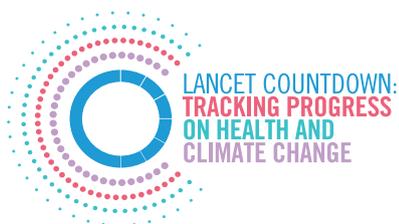
57. Canada Go. Pricing carbon pollution in Canada: how it will work. 2017 [October 2018]; Available from: [https://www.canada.ca/en/environment-climate-change/news/2017/05/pricing\\_carbon\\_pollutionincanadahowitwillwork.html](https://www.canada.ca/en/environment-climate-change/news/2017/05/pricing_carbon_pollutionincanadahowitwillwork.html)
58. Tasker J. Trudeau promises rebates as Ottawa moves to levy carbon tax on provinces outside the climate plan. Canadian Broadcasting Corporation, . 2018. [cited October 23, 2018]. Available from: <https://www.cbc.ca/news/politics/tasker-carbon-tax-plan-trudeau-1.4874258>.
59. Rivers, N. British Columbia's Revenue Neutral Carbon Tax: A Review of the Latest 'Grand Experiment' in Environmental Policy. 2015.
60. Petrick S, Wagner U. The Impact of Carbon Trading on Industry: Evidence from German Manufacturing Firms. SSRN 2014.
61. Martin R, de Preux L, Wagner J. The impact of a carbon tax on manufacturing: Evidence from microdata. *Journal of Public Economics* 2014; 117:1-14.
62. Thompson T, Rausch S, Saari R, Selin N. A systems approach to evaluating the air quality co-benefits of US carbon policies. *Nature Climate Change* 2014.
63. Li M, Zhang D, Li C, Mulvaney K, Selin N, Karplus V. Air quality co-benefits of carbon pricing in China. 2018; 8: 398-403.
64. Watts N, Amann M, Ayeb-Karlsson S, Belesova K, Bouley T, Boykoff M, et al. The Lancet Countdown on health and climate change: from 25 years of inaction to a global transformation for public health. *Lancet* 2017.
65. Myers T, Nisbet M, Maibach E, Leiserowitz A. A public health frame arouses hopeful emotions about climate change. *Climate Change* 2012; 113:1105-12
66. Maibach EW, Nisbet M, Baldwin P, Akerlof K, Diao G. Reframing climate change as a public health issue: an exploratory study of public reactions. *BMC Public Health* 2010; 10:299.
67. Environics Health Research. Public Perceptions of Climate Change and Health Final Report. Health Canada,; 2017.
68. Cunsolo A, Ellis N. Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change* 2018; 8:275-81.
69. Hayes K, Poland B. Addressing Mental Health in a Changing Climate: Incorporating Mental Health Indicators into Climate Change and Health Vulnerability and Adaptation Assessments. *Int J Environ Res Public Health* 2018; 15(9).
70. Riley S. 'The lost summer': the emotional and spiritual toll of the smoke apocalypse. 2018. [cited Aug 21, 2018]. Available from: <https://thenarwhal.ca/the-lost-summer-the-emotional-and-spiritual-toll-of-the-smoke-apocalypse/>.
71. Berry P. Personal Communication Howard C. 2018 Located at.

72. Canada Bikes CW, National Active and Safe Routes to School Working Group. Support the Call for a National Active Transportation Strategy. 2018 [October 25, 2018]; Available from: <https://activetransportationcanada.weebly.com/>
73. Joule. Virtual Care Connects. 2018 [October 25, 2018]; Available from: <https://joulecma.ca/innovate/vc>
74. Government of Canada. Revision process for Canada's Food Guide. Health Canada; 2018 [Oct 25, 2018]; Available from: <https://www.canada.ca/en/health-canada/services/canada-food-guides/revision-process.html>
75. Aalhus M. The Social Determinants of Health Impacts of Resource Extraction and Development in Northern Communities Northern Health Authority, British Columbia,; BC Observatory for Population and Public Health and Northern Health, BC Centre for Disease Control, BC Observatory Population and Public Health; 2018.
76. Government of Canada. A proposed new impact assessment system. 2018; Available from: <https://www.canada.ca/en/services/environment/conservation/assessments/environmental-reviews/environmental-assessment-processes.html>





Created by



ASSOCIATION  
MÉDICALE  
CANADIENNE



CANADIAN  
MEDICAL  
ASSOCIATION



CANADIAN  
PUBLIC HEALTH  
ASSOCIATION

ASSOCIATION  
CANADIENNE DE  
SANTÉ PUBLIQUE

The Voice of Public Health  
La voix de la santé publique