

**FACT SHEET**

# Climate Change and Heat Waves

July 2024

Climate change, primarily from the burning of fossil fuels, is [causing more frequent and intense heat waves](#) (ClimateData.ca 2024). These heat waves are threatening the safety, well-being, and prosperity of Canadians—even in cities that have historically had more moderate climates, such as Vancouver, Whitehorse, and Halifax.

Globally, 2023 was the hottest year on record, and 2024 is [on track to be even hotter](#) (World Meteorological Organization 2024). Canada, which is [warming faster](#) than anywhere else on earth, is suffering the consequences of the overheating climate (McBean 2024).

## Climate change fuels heat waves

- Canada is warming [twice as fast](#) as the global average, and Canada's Arctic is warming [nearly four times as fast](#) (Government of Canada 2019; Rantanen et al. 2022).
- Climate change [increases the frequency](#) of extreme heat, makes heat waves [move more slowly](#), and results in more frequent and severe [heat domes](#) (Seneviratne et al. 2021; Borenstein 2024; Bratu et al. 2022).
- Environment and Climate Change Canada has determined that the June 2024 heat wave that struck central and Eastern Canada was [two to 10 times more likely](#) as a result of climate change, with temperatures over 10 degrees higher than normal in parts of Quebec and Atlantic Canada (Shingler 2024).

## Climate-fuelled heat makes wildfires worse

- Climate change [more than doubled](#) the likelihood of extreme fire weather conditions (high temperatures, low humidity, and drought conditions) in Eastern Canada in 2023, and made Québec's 2023 fire season around 50 per cent more intense (World Weather Attribution 2023).
- Heat waves make it easier for wildfires to start and spread. Intense heat makes lightning, the primary cause of wildfires, more likely to occur (Pérez-Invernón et al. 2023), and makes vegetation drier and more flammable, facilitating the spread of wildfires (Natural Resources Canada 2024).
- During the [2021 heat wave in B.C.](#), the number of active wildfires rose from six to 175, with fires that spread during the heat wave consuming nearly 79,000 hectares, including the entire town of Lytton (White et al. 2023).

- For more information on climate change and wildfires, please see our wildfires fact sheet.

### **Climate-fuelled extreme heat takes a significant toll on Canadian safety, well-being, and prosperity**

- A study in [Nature](#) found that between 1981 and 2018, 37 per cent of heat-related deaths globally can be attributed to climate change (Vicedo-Cabrera et al. 2021). This increased mortality is evident on every continent.
- [Elevated death rates](#) have been documented during and immediately following heat waves in Canada (Government of Canada 2024). The British Columbia heat wave of June 25 to July 2, 2021, saw an estimated [619 heat-related deaths](#), making it the deadliest disaster in B.C.'s recorded history (BC Coroners Service 2022).
- Climate scientists [found](#) that the 2021 B.C. heat wave would have been virtually impossible without human-caused climate change (Philip et al. 2022).
- A 2024 [study by the Institut national de la recherche scientifique](#) concludes that elevated summer temperatures in Quebec are associated with 470 deaths, 225 hospitalizations, 36,000 emergency room visits, 7,200 ambulance transports, and 15,000 calls to Info-Santé every year (Boudreault et al. 2024).
- Our 2021 report [The Health Costs of Climate Change](#) projected that the costs of heat-related deaths and reduced quality of life from extreme heat in Canada would range from \$3 billion to \$3.9 billion per year by mid-century (Clark et al. 2021).
- [Our research](#) shows that the 2021 heat wave in B.C. caused \$12 million in additional healthcare costs, and that without action on adaptation and health system preparation, the province could average 1,370 heat-related deaths per year by 2030 (Beugin et al. 2023).
- The International Labour Organization [finds](#) that 2.4 billion workers, fully 70 per cent of the global workforce, are exposed to extreme heat, with elevated risk of cancer, cardiovascular disease, kidney dysfunction, and physical injury (International Labour Organization 2024).
- Canada's manufacturing sector alone could see [annual losses in between \\$1 billion and \\$2 billion by 2050](#), due to the productivity impacts of heat waves on Canada's workforce (Clark et al. 2021).

### **Governments can act to protect communities and slow further warming**

- Scientists have warned that the consequences of climate change will only get worse as the concentration of heat-trapping gases in the atmosphere increases (IPCC 2022). Governments around the world, including Canada's,

must act immediately to reduce greenhouse gas emissions and limit global warming.

- Because the impacts of climate change are already here and getting worse, communities and governments must work together to adapt and prepare for increased fire risks today.
- Ways for governments and other entities to prepare and protect people from extreme heat include:
  - Making buildings safer by encouraging the installation of indoor cooling devices (like heat pumps or air conditioning).
  - Planting green roofs and trees for shade in urban areas—such measures, if implemented in the B.C. Lower Mainland, could reduce heat-related deaths by 12 per cent in the 2030s and cut heat-related hospitalizations by 7 per cent, compared to status quo policies (Beugin et al. 2023).
  - Giving employers and the public up-to-date information on how to keep safe during extreme heat waves.
  - Sending heat warnings out early enough to let people and responders prepare.
  - Designing infrastructure such as roads, railways, and electricity systems to withstand extreme heat and rainfall—this can reduce damage costs by [80 per cent by the end of the century](#), or up to \$3.1 billion each year (Ness et al. 2021).

### **Proper preparation for heat waves improves health outcomes and makes financial sense**

- [Proactive adaptation interventions](#) like urban greening and mechanical cooling can reduce the annual cost of heat-related hospitalization by up to 30 per cent in B.C.'s Lower Mainland by mid-century (Beugin et al. 2023).

### **Resources**

- [Reporting Extreme Weather and Climate Change: A Guide for Journalists](#) (Clarke and Otto 2024)
- [Climate Change and Heatwaves](#) (World Meteorological Organization, 2023)
- [Extreme Heat Events Overview](#) (Government of Canada 2024)
- [Extreme Heat Preparedness Guide](#) (PreparedBC 2024)
- [Health Impacts of Extreme Heat](#) (Climate Atlas of Canada 2024)

### **Experts available for comment and background information on this topic:**

- **Ryan Ness** is Director of Adaptation research at the Canadian Climate Institute and the lead researcher on the Institute's [Cost of Climate Change](#)

[series](#). Ryan est également disponible pour des entretiens en français.  
(Eastern Time, English and French).

- **Sarah Miller** is Research Lead in Adaptation at the Canadian Climate Institute  
(Pacific Time, English).

**For more information or to arrange an interview, please contact:**

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