POLITICAL ACTION BULLETIN

The climate crisis and health: Impacts on Ontario

The Registered Nurses' Association of Ontario (RNAO) recognizes that climate change is an immediate and growing threat to human health. We are facing a climate emergency. Globally, 2023 was the hottest year on record, and the global average temperature for July 2023 was also the highest on record – since at least 120,000 years ago (UN, 2023). Many other troubling records are being broken, such as for global sea surface temperatures in 2023 (Copernicus, n.d.).

In Canada, average temperatures are rising at twice the global average – three times in the north (Environment and Climate Change Canada, 2022). In 2023, Canada was 2.0°C hotter than it was in 1948 – the year records commenced (Government of Canada, 2024b). Last winter was the warmest on record – 5.2°C above the baseline average – led largely by record highs in Ontario (Government of Canada, 2024a; Environment and Climate Change Canada, 2024). Southern Ontario, defined as the Great Lakes/St. Lawrence basin, was 5.4 degrees above the baseline average while the rest of Ontario was 6.3 degrees above the baseline average (Environment and Climate Change Canada, 2024).

Globally, human activities are driving climate change – primarily the burning of fossil fuels, and secondarily deforestation and industrial agriculture (UN, n.d.). Sustainability of life on this planet requires phasing out fossil fuels as well as massive changes in energy systems and land use across the world. In the absence of dramatic change to how we live on this planet, every region around the globe will experience more frequent and harsher catastrophic climate events: heatwaves and droughts, flooding, tropical cyclones, extra-tropical storms, and increases in aridity and fire weather, at great cost to human life.

The extent to which current and future generations experience these events and their health impacts depends on choices we make in the immediate and very near term. The cumulative effect of greenhouse gas (GHG) emissions demands that every year emissions reductions are made on the necessary path to net-zero by 2050. The fight against climate change demands urgent and sustained action from international, national and sub-national levels of government to mitigate a looming humanitarian catastrophe. The province of Ontario must play its part.

We call on the province of Ontario to implement a science-based climate plan with revised provincial GHG emission targets, and to design programs, regulations and services to meet those targets. We also demand the province act on crucial actions we outline below to sustain the health and wellbeing of all Ontarians in the face of future-altering threats.

Background

The big picture – our planet, Canada and Ontario

In March 2023, the United Nations' International Panel on Climate Change (IPCC) released a report synthesising its work during the sixth assessment cycle (October 2015–July 2023). The sixth assessment cycle report found that global surface temperature has increased faster since 1970 than in any other 50-year period over at least the last 2,000 years. The impacts have been extensive, devastating and inequitable: "Climate change has caused widespread adverse impacts and related losses and damages to nature and people that are unequally distributed across systems, regions and sectors. Economic damages from climate change have been detected in climate-exposed sectors, such as agriculture, forestry, fishery, energy and tourism. Individual livelihoods have been affected through, for example, destruction of homes and infrastructure, and loss of property and income, human health and food security, with adverse effects on gender and social equity" (IPCC, 2024).

Canada's climate is rapidly changing too. Since 1948, Canada's annual average temperature has roughly doubled the global average. According to a 2019 report sponsored by the Treasury Board of Canada, the impacts have been profound to date; increasingly frequent heatwaves, changing precipitation patterns, reduced snow and ice cover, thawing permafrost, shrinking and thinning arctic sea ice, and changes in streamflow are all leading to widespread impacts on natural and human systems (CCA, 2019). Canadians from coast to coast to coast – urban, rural and remote – continue to experience the devastating effects of climate change, from flooded city streets to raging wildfires that raze whole towns and choke communities thousands of kilometres away.

In 2020, the Ontario government commissioned the Climate Risk Institute (CRI) to perform an impact assessment of climate change on the province, resulting in a 505-page technical report presented in January 2023. The report paints a grim picture of historical trends in Ontario, such as rapidly declining ice cover in the Great Lakes Basin over the last half-century (CRI, 2023). In an even grimmer picture of the future, the report predicts an average of more than 60 extreme hot days (more than 30°C) in south-west, central and eastern Ontario later in this century (CRI, 2023). The north-east and north-west of the province can anticipate more than 35 extreme hot days per year, on average. Further, the report (CRI, 2023):

- forecasts **declining productivity, crop failure, and livestock fatalities**
- identifies that all **infrastructure** is at medium and increasing risk
- points to vastly increasing risk to almost all **natural systems and species** assessed by mid-century
- confirms that climate risks are highest among Ontario's most **vulnerable populations** – especially Indigenous communities – and will continue to amplify existing disparities and inequities
- projects that most **businesses** will face increased risks, with the largest risks to fall on those dependent on natural resource systems and where historical infrastructure deficits exist

Health impacts of climate change

Climate change presents a fundamental threat to human health (WHO, 2023). Not only is the physical environment impacted but also all aspects of both natural and human systems – including social and economic conditions and the functioning of health systems. Climate shocks and growing stresses such as changing temperature and major climate events – storms, freezing rain, flooding, tornadoes, wildfires and so on – degrade the environmental and social determinants of physical and mental health.

The direct impacts on health are severe. Climate events contribute to morbidity and mortality through both immediate injury, disruptions of health-care delivery, evacuation, and chronic disease. For example:

- **Wildfires and climate-induced air pollution** can cause Immediate health outcomes, including cough, wheezing, asthma attacks, shortness of breath, nose, throat, eye and sinus irritation, dizziness, heart palpitations, chest pains (Government of Canada, 2024a and 2024c, Tiotiu et al., 2020). They are also high-risk factors for premature death and disability. (Government of Canada, 2024a and 2024c; Korsiak et al., 2022). Above-background air pollution contributed to 17,400 premature deaths across Canada in 2018, with more severe health impacts in densely populated or heavily polluted areas (Government of Canada, 2024a). An estimated 6,500 of these deaths – more than one-third of the national premature death toll – happened in Ontario (Government of Canada, 2024a).
- **Heat waves and extended heat exposure** affect health in multiple ways. Extreme heat can cause heat exhaustion, heat illness, heat stroke and even death (Statistics Canada, 2024; Canadian Medical Association, 2024); it can also worsen pre-existing conditions such as kidney issues (Canadian Medical Association, 2024) . Extreme heat also increases mental health distress, including anxiety, depression, agitation, violence and suicide attempt (Canadian Medical Association, 2024; Canadian Women's Foundation, 2024; Meadows et al., 2024).
- **Flooding** can result in drowning, acute trauma and/or physical injuries from direct contact with flood water. Other health risks related to flooding include shock, hypothermia, exertion and stress related conditions, such as high blood pressure, heart attacks and strokes (Canadian Climate Institute, 2024). Flooding can also spread waterborne diseases and increase exposure to mould, fungi, and bacteria, which can in turn lead to skin rashes, allergies, asthma, and eye and ear infections (Canadian Climate Institute, 2024; Greco et al., 2020).
- **Warming temperatures** are also responsible for the increase in vector-borne disease in Ontario. The incidence of Lyme disease, for example, has increased at a phenomenal rate in Ontario (PHO, 2024). Bites from infected ticks result in skin rash, fever, headaches, fatigue, muscle and joint pain and delayed treatment may lead to serious long-term symptoms including heart problems, immune system, endocrine system, neurological system problems and even death.

- **Mental health impacts** also result from looming and actual manifestations of climate change. Increasingly frequent events such as flooding and heatwaves give rise to significant stress, causing "climate anxiety" (Galway and Field, 2023). Inadequately housed and economically disadvantaged groups are particularly vulnerable to the mental health impacts of climate changes. So, too, are young people who see their future in danger.

Adding to the damaging health impacts of climate change is the erosion of social and economic conditions that support health. The aforementioned impact assessment report on Ontario (CRI, 2023) points directly to the effects of climate change on determinants of health – from economic security, to food and water security to natural systems and species:

- **Food security:** Vulnerable populations and communities and regions currently experiencing **food insecurity** will to be disproportionately affected by climate change, as climate risks are evident within all dimensions of food security.
- **Water security:** Climate change will likely challenge Ontario's water systems, impacting **water resources**, drinking water, stormwater and wastewater infrastructure. Improved decision-making processes, coherent policies and collaboration are needed given the complex and interconnected nature of the water sector.
- **Energy security:** Climate change already poses risks to Ontario's energy systems. These risks are expected to continue and, together with other external influences, will increasingly impact **energy system reliability, capacity, and pricing**. Significant infrastructure investment is needed to meet greenhouse gas emissions targets and ensure an affordable, reliable and equitable energy system across Ontario.
- **Community function:** Given forecasted impacts on various components of the natural environment, infrastructure, the business sector, and food and agriculture, climate risks will impact the resiliency of Ontario's **communities**.
- **Health, safety, and wellbeing:** Vulnerable and remote communities and regions across Ontario will likely be disproportionately affected by climate change, given that climate risks impact many of the social determinants of **health**. Existing inequities and population vulnerabilities should be prioritized so that risks to their health, safety and well-being can be minimized.

Health equity in the context of climate change

Climate change imposes disproportionate health impacts on marginalized populations.

Indigenous communities experience a disproportionate impact on health due to climate change, largely because of their deep, intrinsic connection to the natural environment. Their food sources, traditional medicines, and cultural practices, including spirituality, social activity and even identity, are closely intertwined with the land and ecosystems. As climate change disrupts these natural systems, it profoundly affects Indigenous ways of life, impacting everything from food security to both physical and mental health, spirituality and cultural identity (Berry et al., 2022).

The unique relationship of Indigeneity with nature intersects with the poverty, inadequate housing and limited access to health care they experience, rendering Indigenous populations particularly vulnerable to climate change impacts (Berry et al., 2022). For example, extreme weather and changing climates disrupt traditional hunting and gathering activities, jeopardizing their food security and cultural heritage (Berry et al., 2014). To address this, the United Nations Declaration on the Rights of Indigenous Peoples specifically emphasizes the link between Indigenous rights and environmental protection (UN, 2021). Articles 25, 29 and 32 acknowledge the right of Indigenous peoples to protect their lands and resources, and calls on governments to uphold their duty to protect the environment that Indigenous communities depend on (UN, 2021).

Other marginalized communities and vulnerable populations in Ontario are also more susceptible to health risks related to climate change. Increased environmental instability often intersects with socio-economic social determinants such as poverty, food insecurity and barriers to health-care access. This results in disproportionate health impacts and deepening health inequity.

For example, **people experiencing homelessness** and **people in core housing need** are at greater risk for health problems arising from extreme heat, cold and precipitation. Environmental stressors (for example, heat waves, flooding, wildfire, air pollution) often compound with social determinants of health (for example, poverty and inadequate housing) leading to cumulative negative impacts on their health.

Another example: **Black people** have higher asthma rates in their communities, making them more vulnerable to air pollution caused by climate change such as wildfire smoke (American Lung Association, 2024, De Pietro, 2021).

The same applies to **people with disabilities**, who often face increased co-morbidities, reduced mobility and are more likely to live in poverty and precarious conditions. (Humanity & Inclusion Canada, n.d.). When confronted with environmental threats such as flooding or wildfire, they experience significant challenges in evacuation and disproportionately bear the environmental consequences (Humanity & Inclusion Canada, n.d.). In addition, **older adults and people experience homelessness** are particularly vulnerable to adverse health effects of heat waves (CRI, 2023). Their fragile physical and mental health, combined with limited access to resources such as cooling infrastructure, disproportionately increases the health risks (CRI, 2023).

These inequitable impacts from climate change highlight the need to prioritize infrastructure improvements and provide more support for marginalized communities and vulnerable populations – as recommended in the 2023 Ontario government impact assessment report. By extension, the health system must also adapt to address local vulnerabilities and health resource needs.

Causes of climate change

A comprehensive GHG reduction strategy must address all economic sectors and activity that rely on fossil fuels and the disruption of natural environments and systems. Fossil fuels – coal, oil and gas – are by far the largest contributor to global climate change, accounting for over 75 per cent of global greenhouse gas emissions and nearly 90 per cent of all carbon dioxide emissions (UN, n.d.).

Although Ontario is not a major producer of fossil fuels, it is a major consumer of oil and gas. Through the burning of fossil fuels for uses such as transportation, heating, industry and electricity generation – locally or through the importation of products from other regions – Ontario is a major contributor to global GHG emissions. Agricultural products, local or imported, create GHG through deforestation, livestock emissions, fertilizer use and soil erosion. Ontario's emitting sectors from largest to smallest are transport, buildings, heavy industry, agriculture, light manufacturing/construction/forestry, oil and gas, waste and electricity. (See RNAO's Fact Sheet, "The climate crisis and health: Impacts on Ontario", for more information.)

Mitigating climate change

In December 2023, the United Nations Climate Change Conference (COP28) closed with the first ever "global stocktake" (UNCC, 2024), per a requirement in the Paris Agreement for parties to review and assess implementation efforts and collective progress towards achieving the agreement's purpose and long-term goals. The stocktake confirmed that the parties are not yet on track for achieving the central goal of the Paris Agreement – holding the increase in the global average temperature to well below 2°C above preindustrial levels. It reaffirmed the need for urgent action to limit the increase to 1.5 degrees within reach. The stocktake concluded that, in order to limit global warming to 1.5 degrees with no – or limited – overshoot, "deep, rapid and sustained" reductions in global GHG emissions of 43 per cent by 2030 and 60 per cent by 2035 (relative to the 2019 level) are required with net zero carbon dioxide emissions by 2050.

These are rapid but doable reductions – and humanity is failing to achieve them. For Ontario to do its share, it needs to drastically revise its current emission reduction target of a 30 per cent reduction below 2005 emission levels by 2030. The global stocktake targets emission reduction targets require Ontario to cut 2022 emission levels by 40 per cent by 2030.

While the contribution of Ontario's emitting economic sectors vary widely, such immediate cuts will require efforts across all economic sectors along with the implementation of strategies to reduce Ontario's biggest emitting sectors over the longer terms so that 2035 (60 per cent reduction) and 2050 targets (net zero emissions) can also be reached.

The current Ontario policies will not come close to achieving the desired outcomes. Ontario is part of the jurisdictions in North America and beyond that are failing to address the most consequential challenge to our civilization. In simple terms, we are failing our children and grandchildren, and our own generation. We are condemning all to a world of increasingly more frequent and devastating climate events that will bring about growing dislocation, destitution, unrest, poor health and death.

We have the technological, economic and social means to act wisely; all we need to master is the political will.

Conclusion

Ontario's 2023 climate impact assessment report concludes with a damning criticism of the effort of the provincial government to address climate change with all its attendant risks: "Ontario has already been affected by climate change as evidenced by recent events such as flooding, heat waves, and unusually high climate variability or extremes. The impacts of climate change have the potential to affect built and natural systems through water shortages, forest fires, power outages, outbreaks of diseases, and more. These changes in climate translate into risks to economic sectors, ecosystems, communities, and people. Ontario, in general, has high institutional, technical, human and financial levels of capacity to support adaptation actions. However, this capacity has not yet been mobilized widely despite the imperative."

It is a reminder that as we hurtle catastrophically toward a difficult and deathly future, we do so as a matter of policy: "Incorporating climate change resilience into decision-making requires the right information, tools, resources and most importantly, willingness." Ontario needs to revise its current climate change policy and ensure that the following recommendations are implemented.

Recommendations for provincial action:

- Implement a science-based climate plan with revised provincial GHG emission targets, and programs, regulations and services to meet those targets, that, at a minimum, meets the requirements of the global stocktake. Report progress under the plan annually to the legislature and revise the plan as required to avoid exceeding global warming greater than 1.5 degrees Celsius.
- Ensure that all actions to mitigate or adapt to climate change respect the rights of Indigenous peoples and comply with the United Nations Declaration on the Rights of Indigenous Peoples.
- Create a highly efficient, lowest cost renewable-based electricity system, as part of a winding down of the fossil fuel economy and a transition to a low-carbon future, by, for example, phasing-out fossil gas as a source of home heating and cooking.

- Reduce GHG emissions from transportation, which accounts for nearly one-third of the province's total emissions: accelerate the adoption of zero-emission vehicles; work with all levels of government to build communities that are safe and walkable and to expand transit and active transportation through sustainable transportation networks.
- Commit to just transition by taxing and regulating fossil-fuel intensive industries while subsidizing green employment and supporting workers to train and relocate.
- Enact strong protection for local food sources and farmlands, end resource-wasting sprawl, and protect natural systems that sustain people, wildlife and improve climate resilience.
- Mandate public health units to prepare and annually update local climate-related emergency preparedness and management plans, with a particular focus on vulnerable populations and communities and required health system resources.
- Working with other orders of government and public health, develop climate informed health programs and services to prevent and mitigate climate-related health impacts, with a particular focus on vulnerable communities, housing, homelessness and food security.
- Increase health system workforce specializing in climate-related health impacts based on local vulnerabilities and planning.
- Integrate impacts of climate change and adaptation strategies into the curriculum for primary, secondary and post-secondary students to increase awareness and shape climate change literacy.

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