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Building Climate Resilient Health Systems: Lessons from Health of Canadians in a Changing Climate-Science Assessment 2022

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Canada

Building Climate Resilient Health Systems: Lessons from *Health of Canadians in a Changing Climate-Science Assessment 2022*

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PHO Rounds
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YOUR HEALTH AND SAFETY... OUR PRIORITY.

Outline

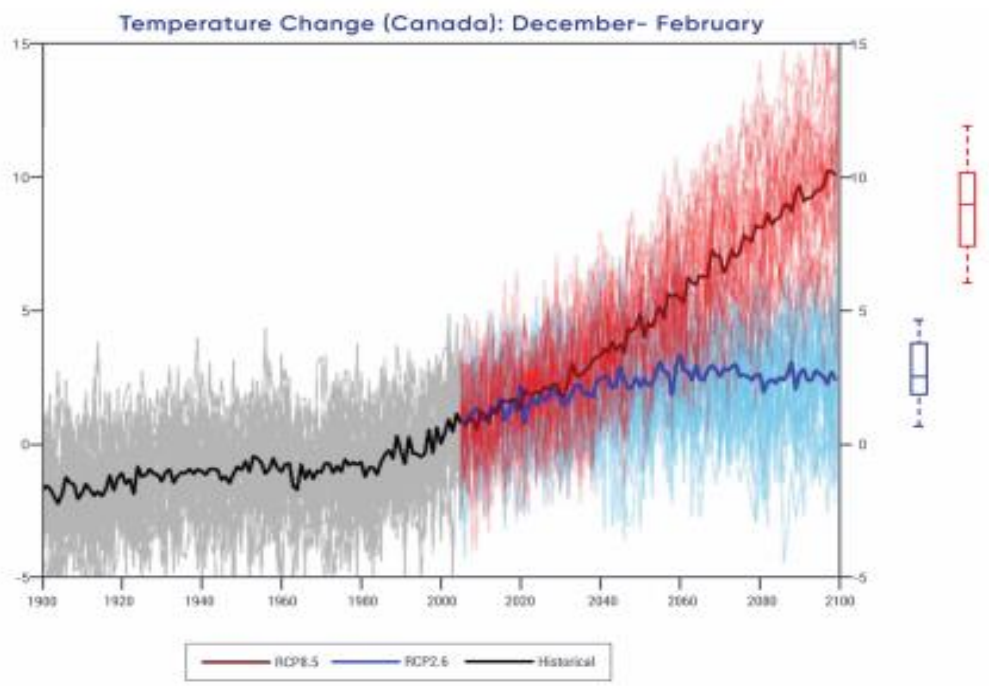
- Key health concerns from climate change
- Canada’s health adaptation gap
- Information and tools to scale up efforts to build climate resilient health systems
- Actions by Health Canada to prepare Canadians

Canada is Warming Rapidly

Canada's Changing Climate Report 2019

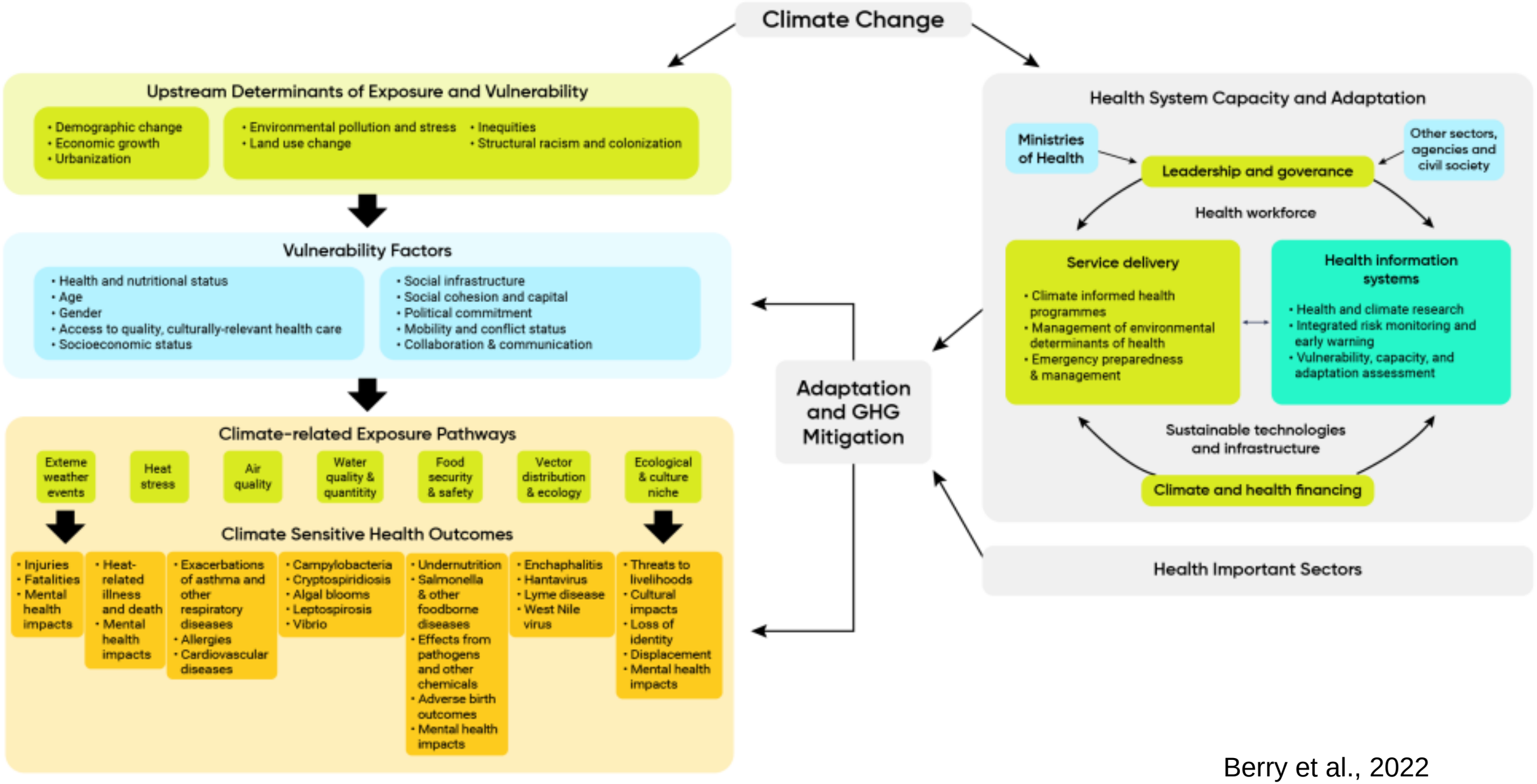
Many current trends in climate change impacts relevant for health will continue, including:

- More frequent and intense extreme hot temperatures;
- Increased severity of extreme heat events;
- Less extreme cold;
- Increased risk of drought
- Increased risk of wildfires
- Increasing length of the growing season;
- Reduced seasonal lake ice cover across the Arctic;
- Reduced sea ice extent;
- Thinning of glaciers; and
- Warming and melting of permafrost



(Bush & Lemmen, 2019)

Pathways through which climate change affects the health of Canadians

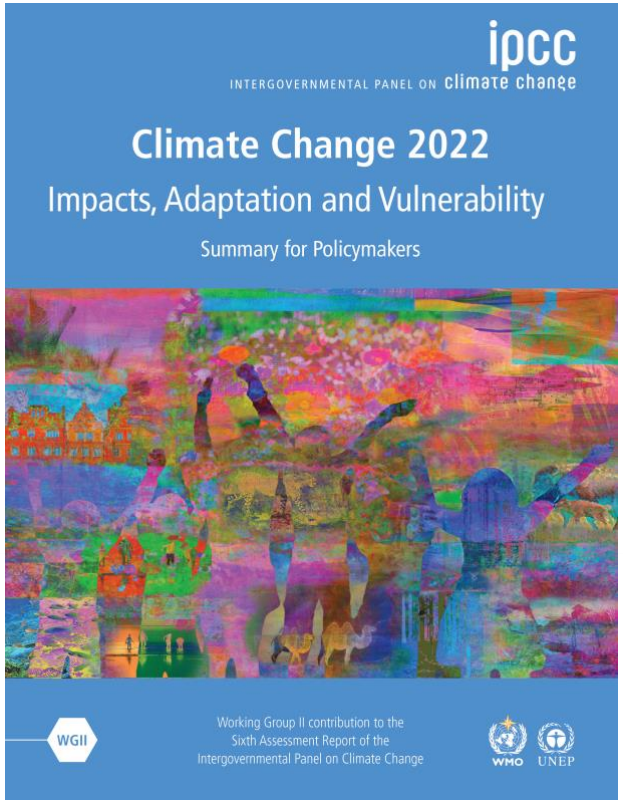


Berry et al., 2022

Increased Evidence of Health Risks from Climate Change

IPCC WG II AR6 Report Health Chapter

- Climate-related illnesses, premature deaths, malnutrition in all its forms, and threats to mental health and wellbeing are increasing *(very high confidence).*
- Climate hazards are increasingly contributing to a growing number of adverse health outcomes (including communicable and non-communicable diseases) in multiple geographical areas *(very high confidence)*.
- A significant increase in ill health and premature deaths from climate-sensitive diseases and conditions is projected due to climate change *(high confidence)*.
- Climate change is projected to significantly increase population exposure to heat waves (*very high confidence*).
- With timely, proactive and effective adaptation many risks for human health and wellbeing could be reduced and some potentially avoided *(very high confidence)*
- Climate resilient development has a strong potential to generate substantial co-benefits for health and wellbeing, and to reduce risks of involuntary displacement and conflict (*very high confidence*)



Cissé, et al., in press

https://www.ipcc.ch/report/ar6/wg2/about/background

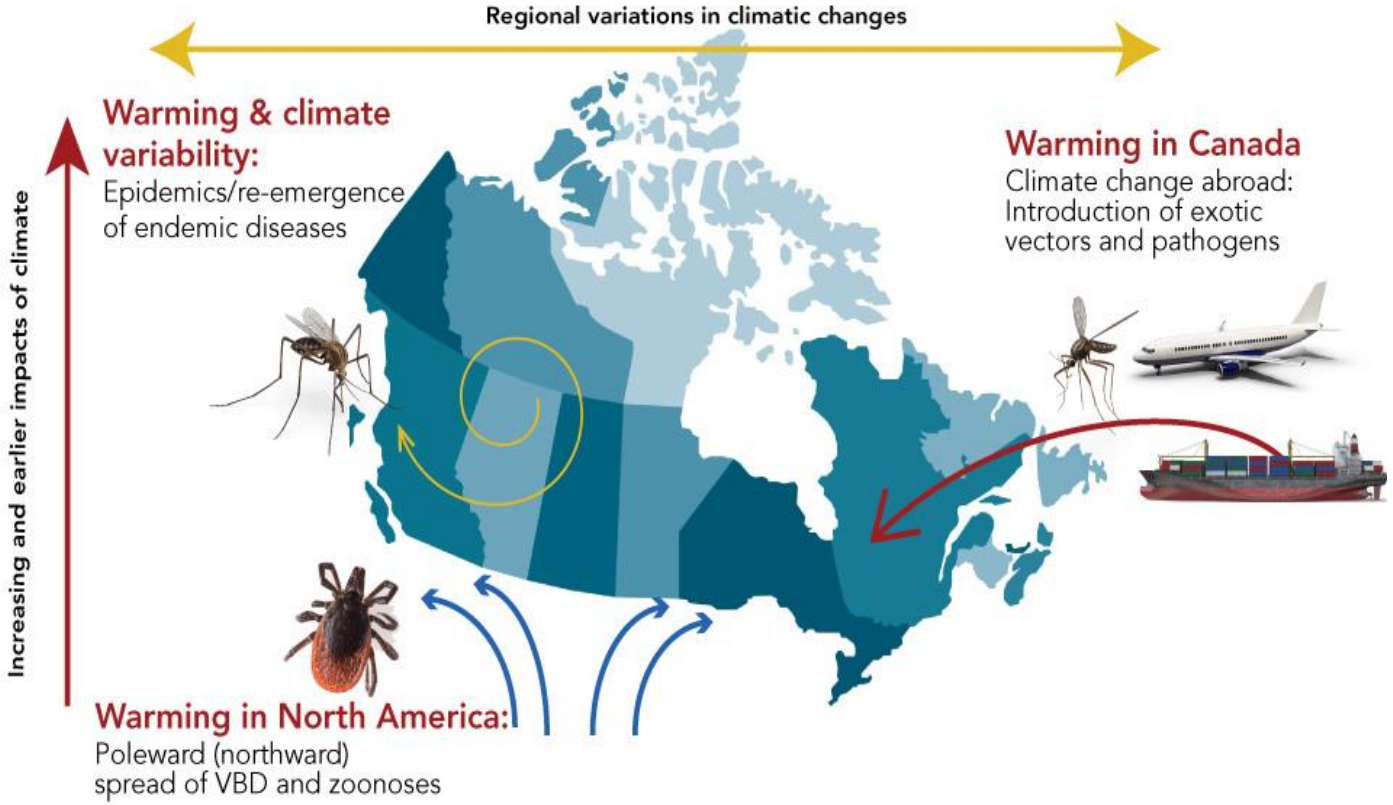
Compounding Events - Fire Disasters in Canada

- British Columbia 2014, 2017, 2018, 2021
- Northern Ontario, 2011
- Quebec, 2013
- North West Territories, 2014
- Saskatchewan, 2015
- Alberta – Fort McMurray 2015

From 2013-2018 between 54-240 Canadians died annually from short-term exposure to wildfire smoke and between 570-2500 died due to long-term exposure (Matz et al., 2020)

CLIMATE CHANGE IMPACTS ON ANIMAL AND ENVIRONMENTAL ECOSYSTEMS LEAD TO INCREASED RISKS FOR HUMAN HEALTH

Climate change causes changes to ecosystems, animal habitats, migration patterns that increase infectious disease risks from vector-, food- and water-borne diseases



Ogden et al., 2022

CLIMATE CHANGE IS A RISK MAGNIFIER FOR INDIGENOUS POPULATIONS

First Nations, Inuit, and Métis peoples in Canada are uniquely sensitive to the impacts of climate change due to a combination of historical context, cultural aspects, environmental challenges, and social and economic issues.

Indigenous populations are facing **increased food security risks** because of new challenges with the harvesting, processing and consumption of country foods.

1 Lemmen, D.S., Warren, F.J., Lacroix, J., & Bush, E. (2008). From Impacts to Adaptation: Canada in a Changing Climate 2007. Government of Canada, Ottawa, ON

2 https://pops.amap.no/

CLIMATE CHANGE ALSO HAS AN IMPACT ON MENTAL HEALTH AND WELLBEING

Climate change is having a significant impact on the mental health and well-being of Canadians. Impacts can occur after an extreme event, or increasing awareness of potential climate-related impacts.

Mental health outcomes after an event can include **post-traumatic stress disorder (PTSD), anxiety, depression**, and suicidal thoughts.

Other psychosocial impacts include weakened social ties in communities, distress related to displacement, increased addictions like drug or alcohol addictions, increased aggression including domestic violence.

Increased anxiety and grief occur due to awareness of climate change effects – often termed **climate/eco-anxiety** and **climate/ecological grief**.

Climate Hazard Impacts on Health and Health Systems

British Columbia extreme heat (June 25 – July 1, 2021)

- British Columbia - sixty temperature records fell on June 27th
- Lytton, BC broke national heat record with temperature of 49.6°C (121F).
- Seniors living alone with chronic illnesses most at risk
- Health services severely stressed
- 740 excess deaths reported over 6 days (Henderson et al., 2021)

Superstorm Sandy (Oct 29, 2012)

- 72 direct deaths
- 72% per cent of those who died suffered from at least one chronic condition
- Health system disruptions in New York and New Jersey.
- 6,400 patients were evacuated
- 6 hospitals and 26 residential care facilities in New York City alone were closed. NYU Langone Medical Center incurred almost US$ 1 billion in damages; remained fully closed for two months.

(American College of Emergency Physicians, 2015; Seltenrich, 2018)

POLL

All of the following vulnerability factors for extreme heat impacts on health were identified in the science assessment *"Health of Canadians in a Changing Climate"*

- Seniors
- Indigenous populations
- Children
- Sex and Gender
- Chronic diseases
- Medication use
- Substance misuse
- Occupational exposure
- Urban heat islands
- Maternal and social deprivation
- People experiencing homelessness
- Ethnicity and race

TRUE

or

FALSE

Climate variability and change impacts on Canadian health facilities

Alberta Health Services, Alberta, 2013
Unprecedented precipitation led to evacuations from, and damage to, a number of hospitals, emergency medical services, facilities, physician offices and urgent, continuing, and long term care sites.

Northern Warming
Rising temperatures are melting permafrost, requiring additional structural support for healthcare facility buildings.

Royal Victoria Hospital, Barrie, Ontario, 2019
Breakdown of air conditioning during period of high heat and humidity resulted in cancellation of 130 surgeries, patient transfers and re-sterilization of medical equipment and linens.

Slave Lake Healthcare Centre, Slave Lake, Alberta, 2011
29 patients evacuated from the hospital due to wildfire.

Eight health regions in Quebec, 2010
July heat wave resulted in 4% increase in emergency department admissions and 33% increase in crude death rate for regions affected.

Interior Health, British Columbia, 2017
Wildfires resulted in facility closures, patient transfers and Very High Health Risk air quality warnings from the smoke.

Hotel-Dieu of St. Joseph Hospital, Perth-Andover, New Brunswick, 2012
Flooding resulted in temporary closure of hospital; 21 patients transferred to other hospitals.

St. Joseph's General Hospital, Comox, British Columbia, 2014
Heavy rainfall resulted in boil water advisory lasting 47 days. Hospital purchased water, required additional labour, and enhanced communication with staff and patients.

Nova Scotia Health Authority, Nova Scotia, 2019
Hurricane Dorian caused power outages at hospitals and service locations, which had to operate on an emergency generator. Sites experienced water damage, temporary closures, and cancellation of appointments.

Regina General Hospital, Regina, Saskatchewan, 2007
Operating theatre closed for 8 days due to high heat and humidity levels.

Sunnybrook Health Sciences, Toronto, Ontario, 2013
Power grid failure from the ice storm lasted 39 hours. Six infants in Neonatal Intensive Care Unit were relocated.

Source: Berry & Schnitter, 2022

"With timely, proactive and effective adaptation many risks for human health and wellbeing could be reduced and some potentially avoided" (very high confidence)

Cissé, et al., in press

Canada in a Changing Climate: Advancing Our Knowledge for Action

- Addresses climate change risks to the health of Canadians, their communities and health systems **to inform effective measures to build climate resilience.**

- Answers the questions:
  - **What are the current and projected impacts** of climate change on the health of Canadians and their health systems?
  - **Who is most at risk** from these impacts?
  - **What is the status of health adaptation** in Canada?
  - **How can we adapt to reduce health risks** and develop more resilient Canadians and health systems?
  - **What knowledge gaps and research** needs remain?

What's New in this Report?

- **New knowledge of health impacts on Indigenous Peoples – and health adaptations**
- **Health equity framework** to inform adaptation and GHG mitigation actions
- **Health system climate resiliency framework and indicators**
- Detailed examination of **mental health impacts of climate change** and needed adaptations
- **34 case studies of health adaptation** (18 Indigenous case studies)
- **Health co-benefits and risks of GHG emissions** framework and estimates

KEY FINDINGS

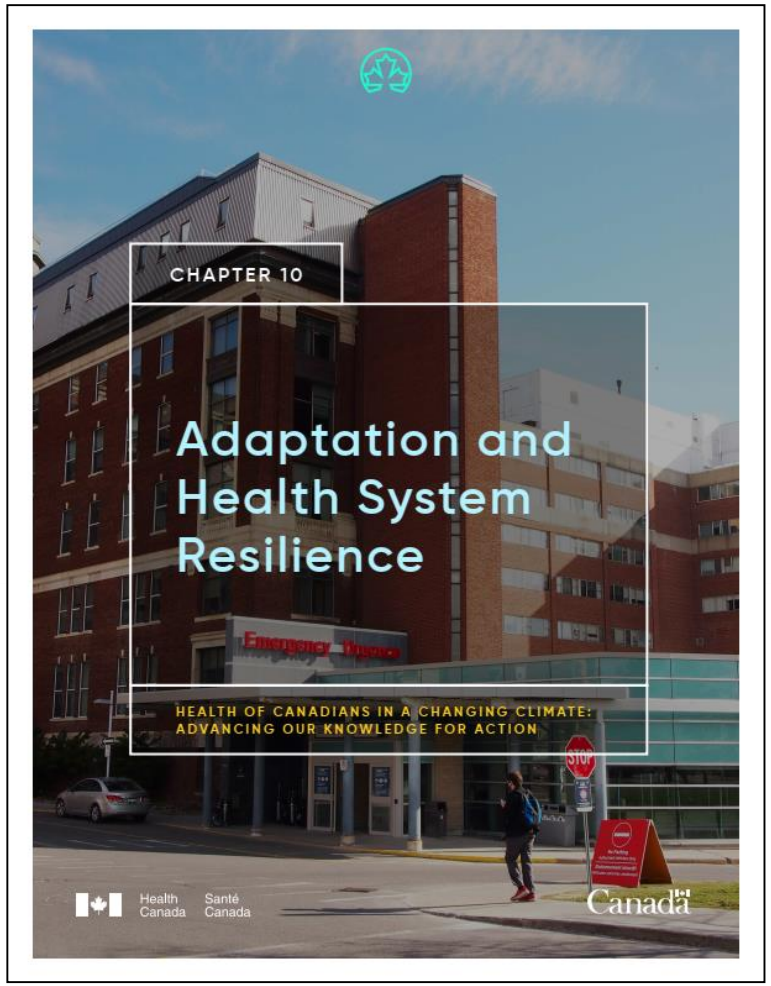
Chapter 10: Adaptation and Health System Resilience

- **The effects of climate change on health and on health systems in Canada are already evident** and will increase in the absence of efforts to address existing vulnerabilities

- **A health adaptation gap exists. Canadian health authorities are undertaking a range of measures to adapt to climate change but are lagging in the development of concrete climate change and health actions** in response to growing risks to Canadians.

- **Climate change impacts on health pose economic costs to Canadians** and these costs will increase in the future in the absence of effective adaptation.

- **Efforts to adapt to climate change impacts on health can significantly reduce impacts** from current climate hazards and from future climate change on individual Canadians, communities and health systems.



Berry et al., 2022

Disparities Exist in Health Adaptation Efforts Across Canada

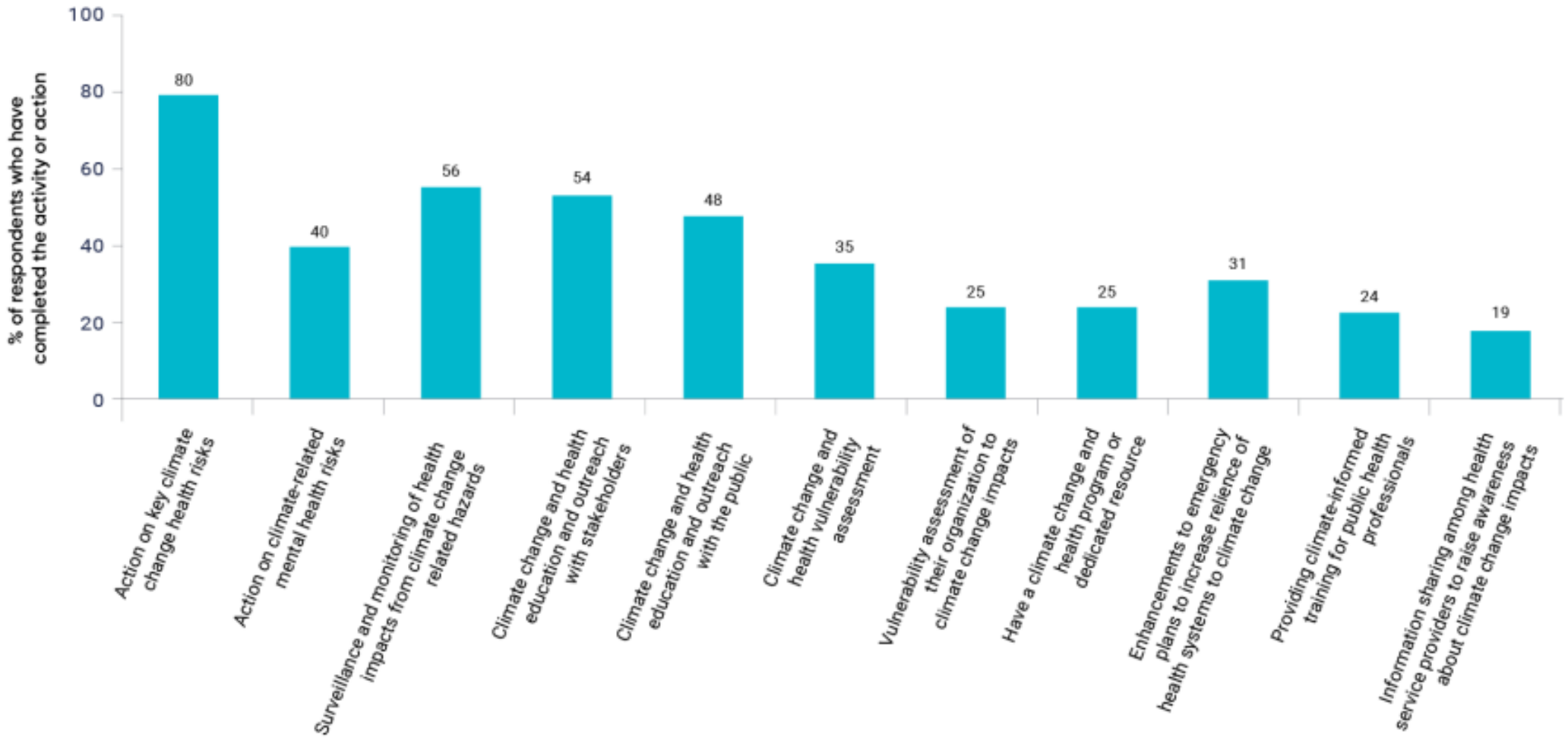


Figure 10.2 Awareness and groundwork activities and actions on climate change and health undertaken by Canadian health authorities. Source: Data from Survey Research Centre, 2019.

POLL

Most hospitals in Canada have undertaken an assessment of risks from climate change impacts

TRUE

or

FALSE

Preparing for Climate Change Impacts by Health Facilities

Many health facilities in Canada are not taking needed measures to address growing climate change risks.

Base upon a survey in 2019 of 102 health facility officials:

- 55% reported that senior leadership had assigned at least one person with some climate change responsibility in their health authority.
- 8% had acknowledged climate change in their strategic plan or had identified climate risks in specific policies
- 4% reported that the impacts of climate-related events, such as flooding and severe weather events, had been recognized in other ways.
- Almost one-third (27%) of facilities had not recognized climate change as an issue of concern and 10% responded that they did not know
- 9% reported having completed climate change resilience assessments, while only 4% had completed vulnerability assessments
- Just over a quarter (27%) of health care facilities reported that they currently had some form of renewable energy in place

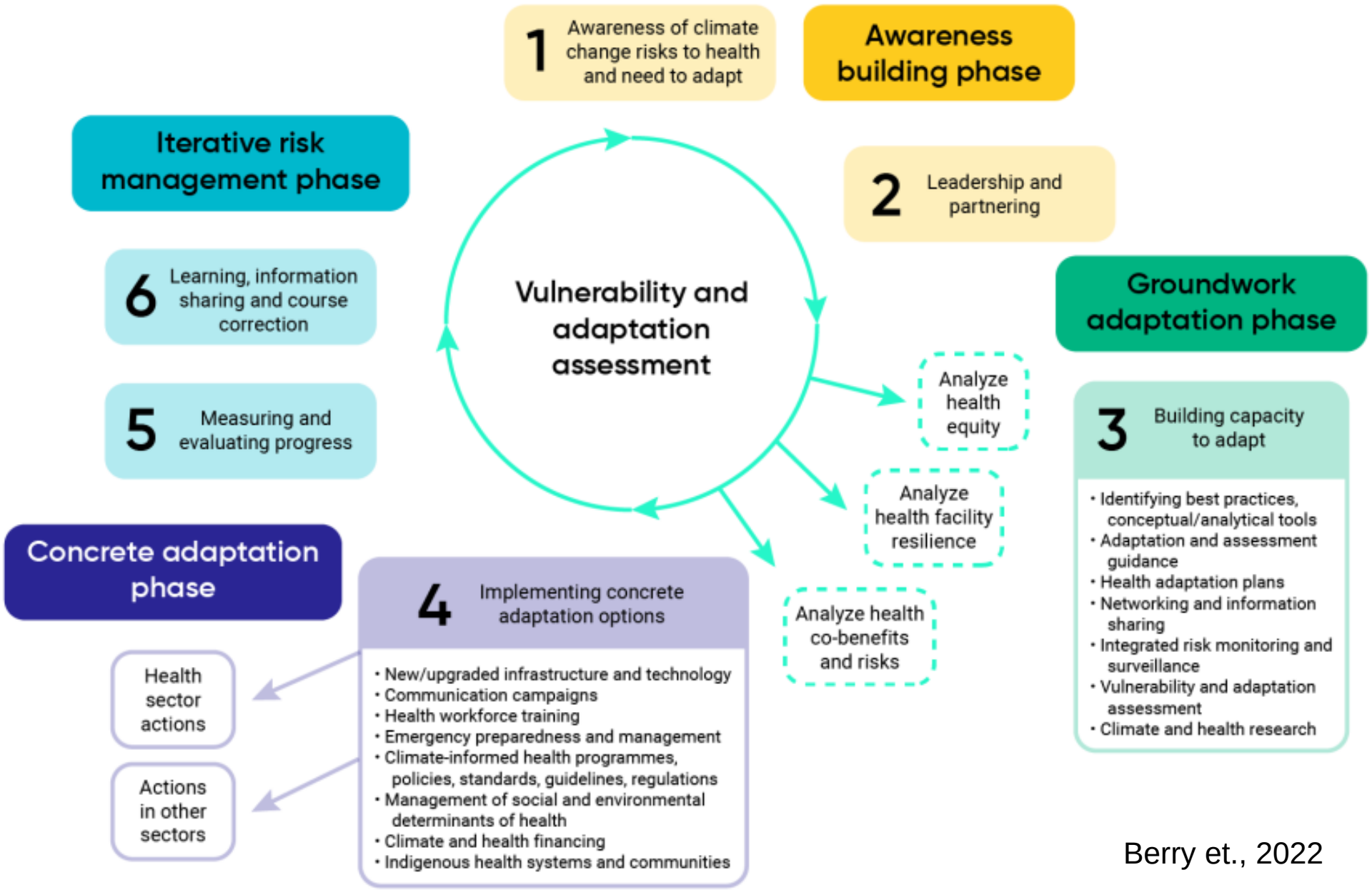
Canadian Coalition for Green Health Care, 2019

Individual Canadians need to increase preparedness for climate change impacts

- 43% of Canadians reported that they had taken steps in the past year to protect themselves and family members against the bite of an infected mosquito or tick (e.g., using insect repellent, wearing long pants and long sleeves, checking for ticks on skin after being outdoors);
- 37% reported that they had an emergency household plan for what to do during a natural disaster or emergency, down from 42% that reported having one in 2008;
- 77% reported that they regularly (51%) or occasionally (26%) check for extreme weather alerts, which is down from 2008 when 81% reported doing so;
- 53% reported that they either regularly (21%) or occasionally (32%) change daily routines as a result of an extreme weather alert; and
- 51% reported ever having taken action or changed plans as a result of hearing a heat warning.

(Environics Research Group, 2017)

Framework for assessment and adaptation to create climate-resilient health systems



Berry et., 2022

STEP 1
Getting started: plan the assessment

STEP 2
Vulnerability assessment: describe the current burden of climate-sensitive health outcomes and vulnerabilities to climate variability and recent climate change

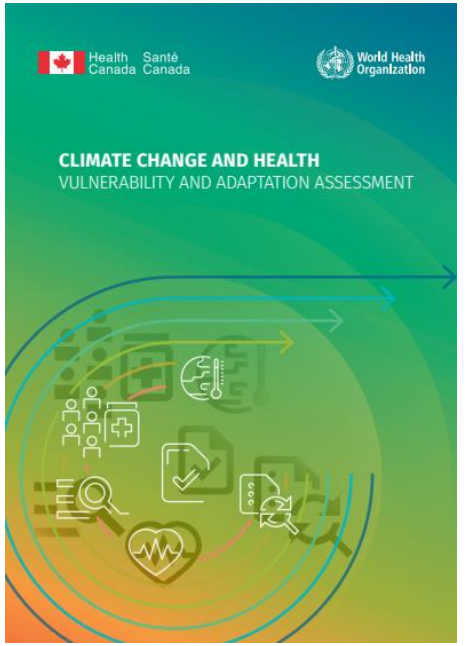
STEP 3
Capacity assessment: Assess the capacities of health and health-relevant systems

STEP 4
Future risk assessment: qualitatively and/or quantitatively project the health risks of climate change

STEP 5
Adaptation assessment: Identify and prioritize policies, programmes and actions to address current and projected health risks

STEP 6
Synthesize the assessment as input into relevant climate change and health policies, plans, and reporting mechanisms

WHO/PAHO/HC Science Assessment Guidance (2021)



https://www.who.int/publications/i/item/10665345968

Who adapts to reduce the health impacts of climate change?

Health system planners and administrators - such as health delivery planners, emergency managers, health facility operators, human resource managers, and financial analysts

Health care practitioners - such as physicians, nurses, nurse practitioners, 911 dispatchers, paramedics, home care workers, pharmacists, occupational therapists, athletic therapists, community support workers and workplace health and safety personnel

Public health officials - such as those involved in environmental health, health communication, food inspection, emergency preparedness, travel medicine, disease prevention, healthy life-styles, communicable diseases, healthy growth and healthy communities

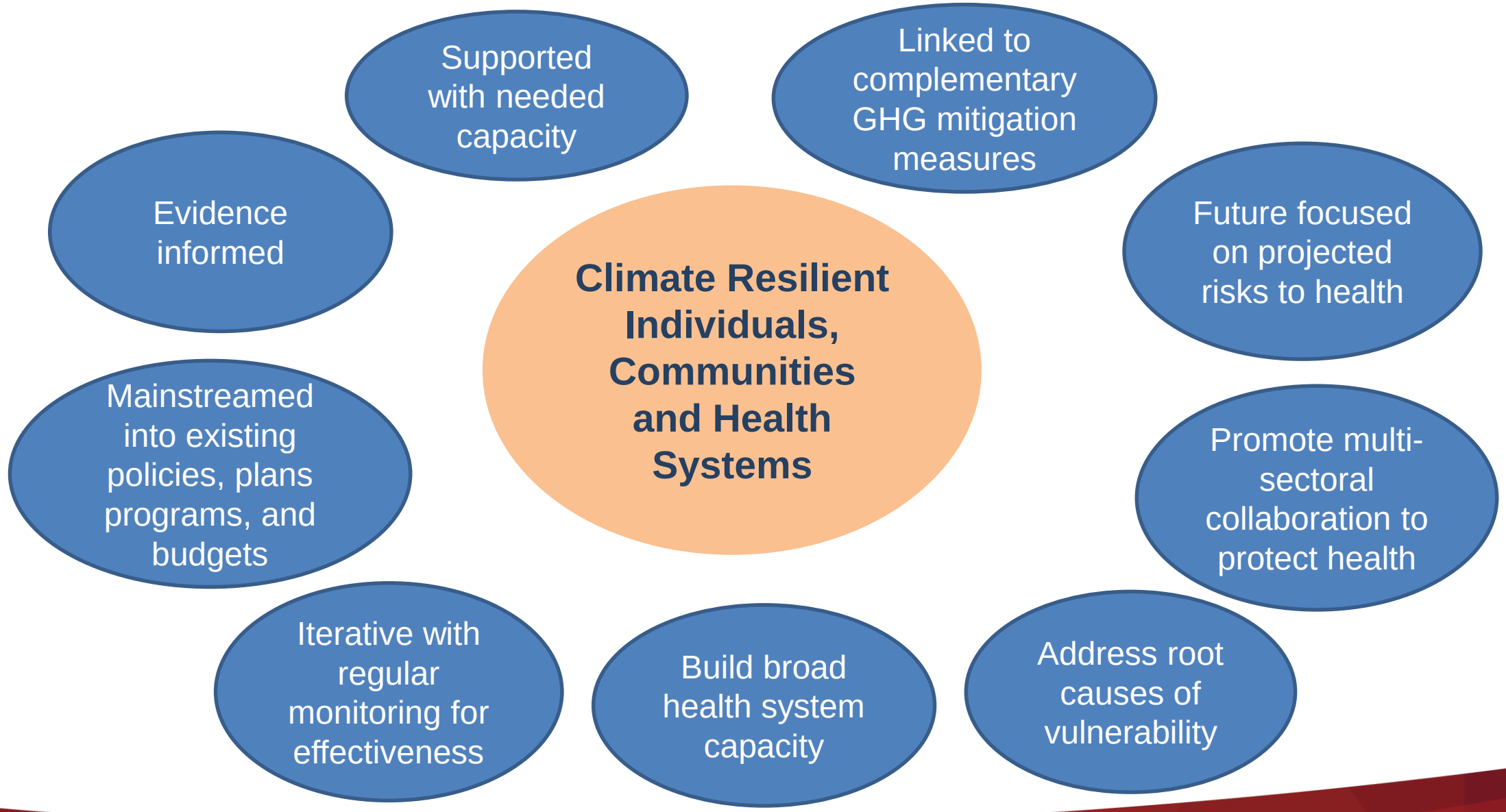
Researchers - scientists, knowledge translation specialists etc

Civil society partners (medical professional associations, grass-roots community groups etc)

Individuals, including those most at risk

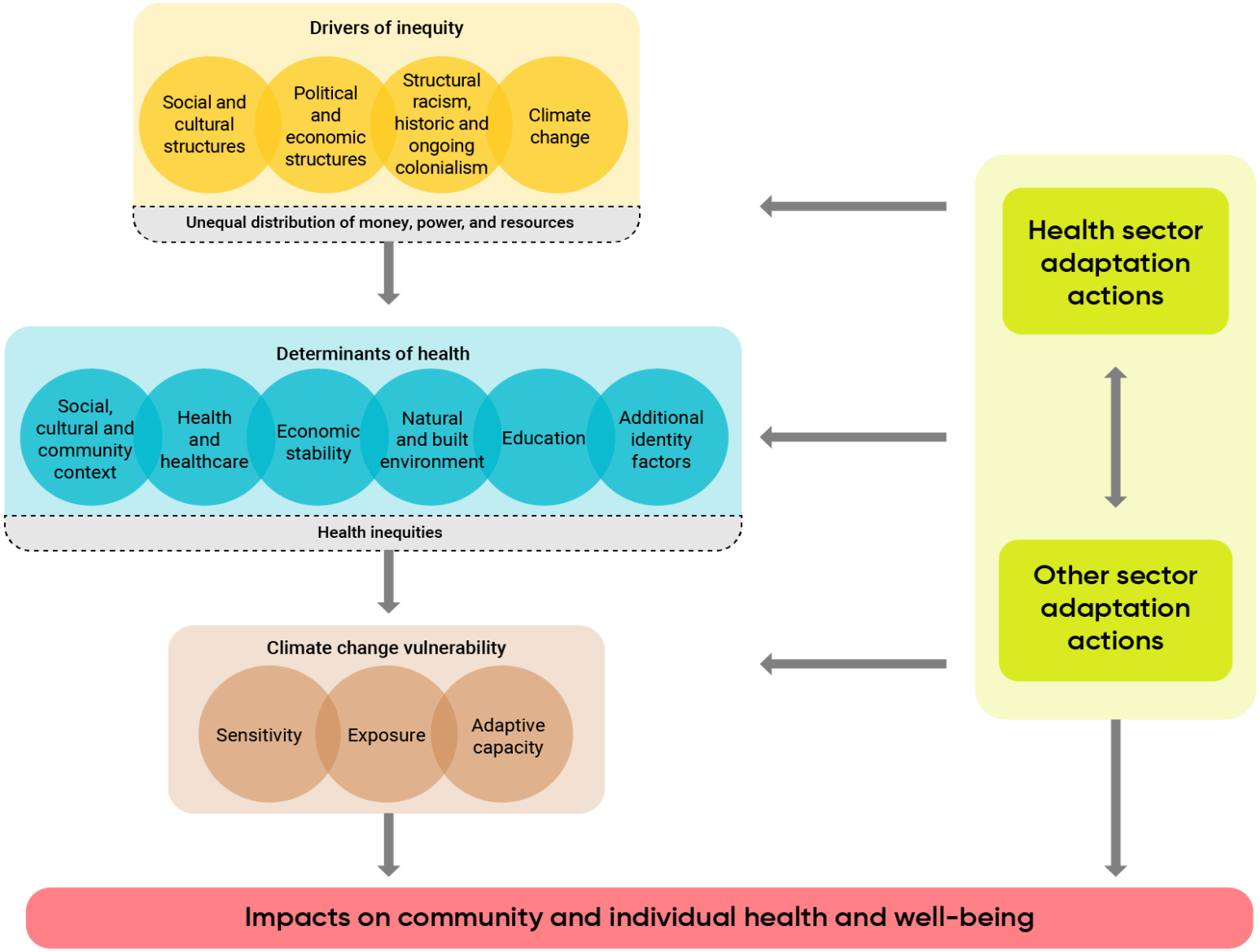
Decision makers outside of the health sector (e.g., energy, transportation, water, agriculture)

Effective Health Adaptation to Reduce Health Risks



Sources: Lesnikowski, 2011; Ebi et al., 2016b; Watts et al., 2018; Haines & Ebi, 2019; Gould & Rudolph, 2015; Sellers & Ebi, 2017

Climate Change and Health Equity Framework



Schnitter et al., 2022

Actions to address climate change in the context of established health sector roles to improve health equity

Role 1: Assess and report on climate change impacts and related health inequities

Example - Collect data on the health impacts of climate change with an equity lens. For example, track deaths caused by extreme heat among racialized individuals living in low-income communities or mental health impacts of climate change among socially disadvantaged populations

Role 2: Modify and orient GHG mitigation and adaptation activities to reduce health inequities

Example - Assess climate change actions for their implications for health equity before implementing them, to minimize negative outcomes and maximize positive benefits

Role 3: Partner and collaborate with others to build climate-resilient communities

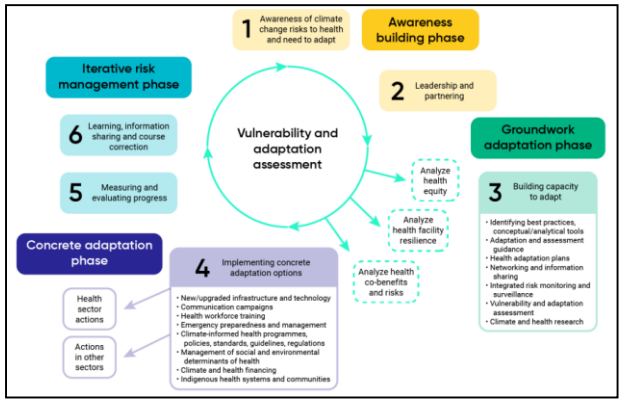
Example - Engage in equitable, community-driven adaptation planning

Role 4: Participate in policy development related to climate change

Example - Embed health equity into all policy measures

Table 10.1 Sample indicators of climate-resilient health system adaptation

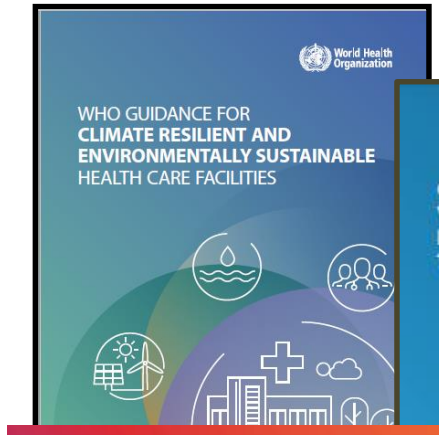
ADAPTATION PHASE	ADAPTATION ACTION	EXAMPLE INDICATORS[3]
Awareness building phase	Communication campaigns	Uptake of climate change and health communication campaigns (e.g., page or video views, observable changes in behaviour, etc.)
		Climate change and health information on health authority websites (e.g., climate change impacts to health and suggestions for behavioural changes that may reduce negative health outcomes)
		Number of climate change and health research projects completed relative to peer jurisdictions with results disseminated
		Media coverage of climate change and health issues
		Social media engagement on climate change and health issues
Groundwork adaptation phase	Leadership and partnering	Proportion of jurisdictions (e.g., communities, provinces, territories and/or regions) with climate change action plans that include measures to protect health
		Proportion of jurisdictions (e.g., communities, provinces, territories and/or regions with climate change and health offices/focal points)
		Number of key stakeholders (e.g., water authorities, community housing groups, assisted-living facilities, school boards, etc.) including climate change and health information in risk assessments

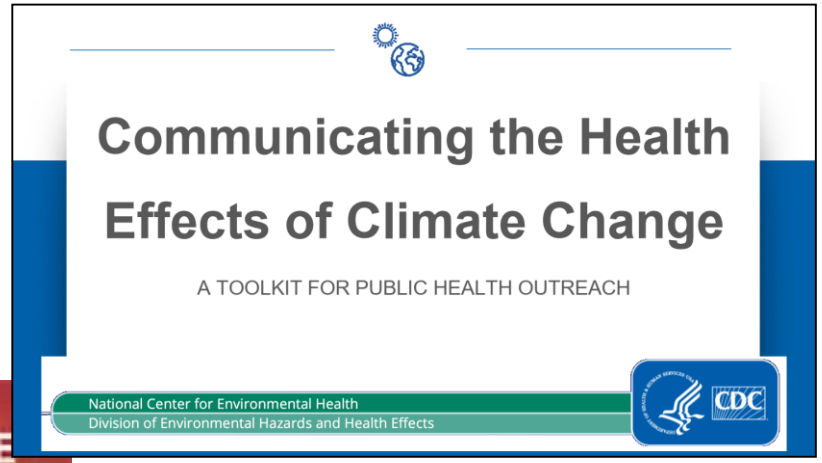


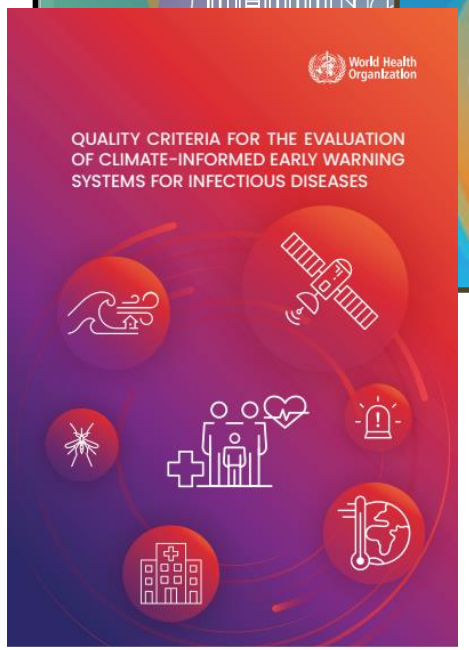
Monitoring Health Adaptation Efforts in Canada

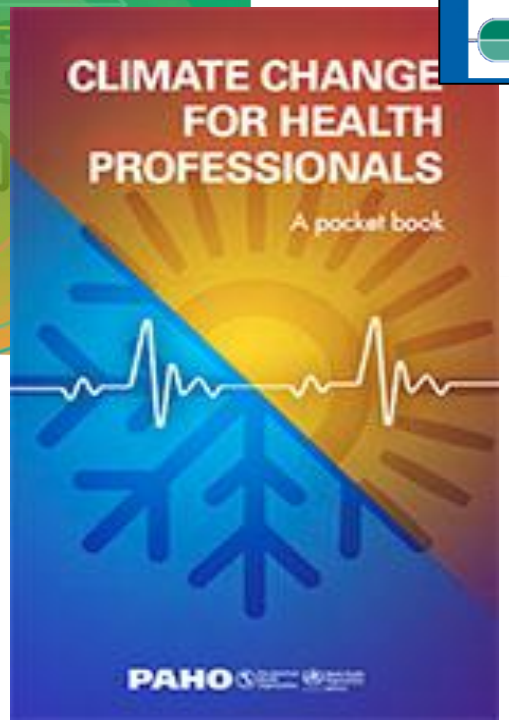
Berry et al., 2022

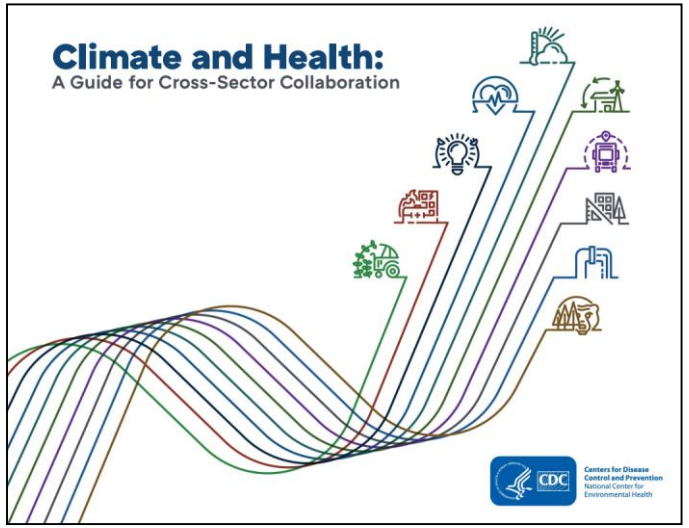
Tools for Preparing Health Systems and Facilities











https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans

https://www.cdc.gov/climateandhealth/site_resources.htm

https://www.who.int/news-room/events/detail/2020/10/13/default-calendar/webinar-climate-resilient-and-environmentally-sustainable-health-care-facilities

https://www.who.int/publications/i/item/checklists-vulnerabilities-health-care-facilities-climate-change

https://iris.paho.org/handle/10665.2/52930

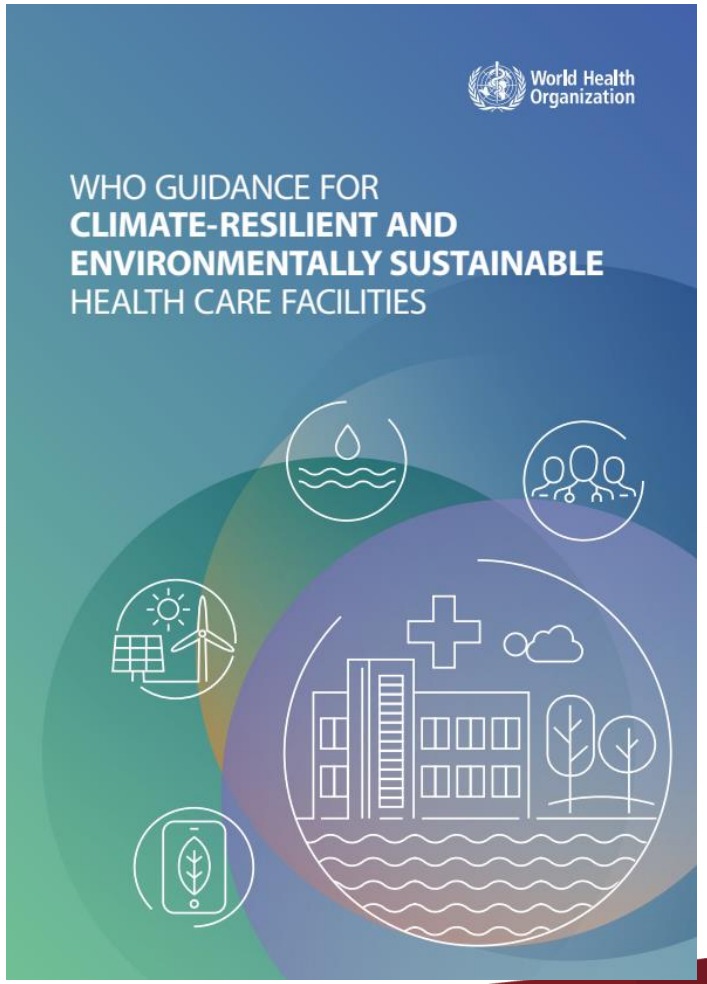
https://www.who.int/publications/i/item/10665345968

https://www.cdc.gov/climateandhealth/docs/CrossSectorClimateandHealth.pdf

WHO Guidance for Climate-Resilient and Environmentally Sustainable Health Care Facilities

Climate resilient health care facilities - *are those that are capable to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stress, so as to bring ongoing and sustained health care to their target populations, despite an unstable climate (WHO, 2020)*

Environmentally sustainable health care facilities *are those that improve, maintain or restore health, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it (WHO, 2017)*



WHO, 2020

Four Fundamental Requirements for Providing Safe and Quality Care in the Context of Climate Change

HEALTH WORKFORCE:
adequate numbers of skilled human resources with decent working conditions, empowered and informed to respond to these environmental challenges.

WATER, SANITATION, HYGIENE AND HEALTH CARE WASTE MANAGEMENT:
sustainable and safe management of water, sanitation and health care waste services.

ENERGY:
sustainable energy services.

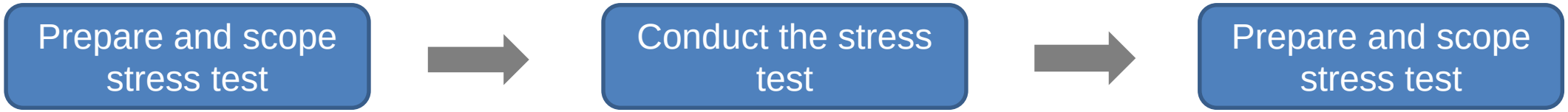
INFRASTRUCTURE, TECHNOLOGIES AND PRODUCTS:
appropriate infrastructure, technologies, products and processes, including all the operations that allow for the efficient functioning of the health care facility.

WHO, 2020

Climate Stress Testing Health Systems and Facilities

The stress-testing tool is used by health sector decision makers develop and use evidence-based climate scenarios in a table-top simulation to identify potential vulnerabilities to climate change impacts and effective adaptation measures (Ebi et al., 2018).

- Implemented to enhance the ability of health systems to manage potentially disruptive climate-related shocks and stresses.
- Utilizes hypothetical scenarios to “test” essential functions of providing services to protect population health related to current and future climate hazards.
- Identifies options for managing climate-related events and challenges and impacts on health systems.
- Build partnerships with key stakeholders within and external to the health facility to sustain future collaborations (Ebi et al., 2018).



Monitoring the Climate Resilience of Health Facilities in Canada

Table 10.6 Proposed climate resilience indicator categories for health care facilities in Canada

PROPOSED HEALTH CARE FACILITY FRAMEWORK COMPONENTS	PROPOSED HEALTH CARE FACILITY RESILIENCE INDICATOR CATEGORIES
Leadership and governance	• Executive responsibility for climate change
Health workforce	• Staff awareness and knowledge of climate impacts on health and the health system and of clinical interventions • Workforce preparation for and support during climate events • Readiness to communicate internally and externally on climate change • Coordination and collaboration on climate change with outside agencies
Vulnerability, capacity, adaptation, and resilience assessment	• Identification of vulnerabilities to climate change by health care facility • Resilience assessment used to develop Health Care Facility Resilience Plan • Participation in vulnerability and adaptation assessments with local public health and community organizations • Capacity-building plans to address gaps in human resources and institutional capacity

Berry et al., 2022

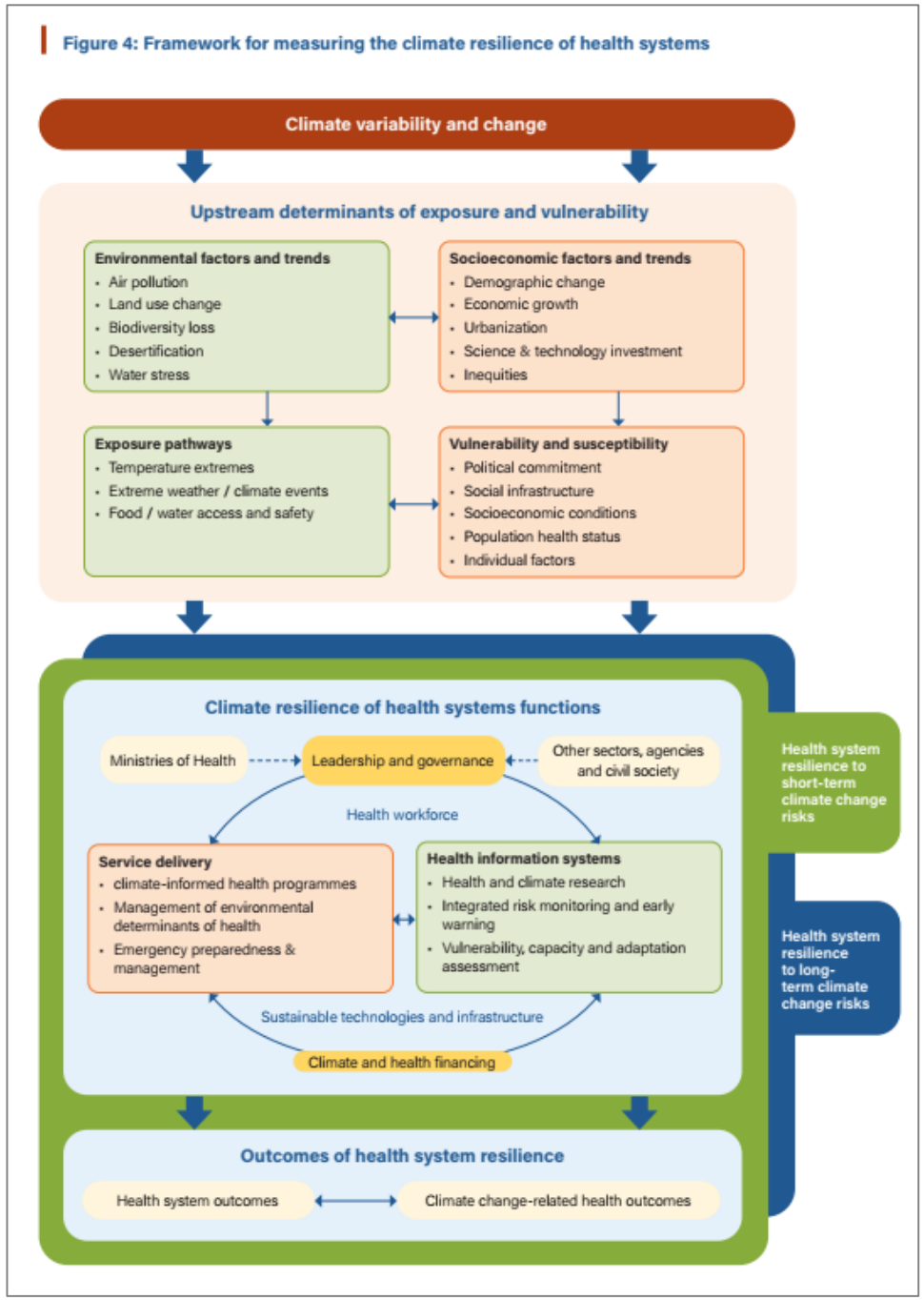
Learning from Partners - Quebec Climate Change and Health Action

Quebec adopted its Plan d'action 2013-2020 sur les changements climatiques (PACC 2013-2020)

Through this plan, $22 million was allocated to prevent and limit diseases, injuries, mortality, and psychosocial impacts and included a range of activities by the existing Quebec health network:

- an observatory assessing the population's level of adaptation to climate change;
- a multi-stakeholder zoonotic observatory;
- a weather and health warning and monitoring system;
- emergency response plans;
- an allergen-pollens reduction strategy;
- comprehensive research programs on climate change impacts and adaptations;
- several dozen urban greening pilot projects;
- several knowledge transfer tools (e.g., Massive Open Online Course on climate change and health; website *Mon climat, ma santé)*

(Demers-Bouffard, 2021)



Measuring the Climate Resilience of Health Systems

[9789240048102-eng.pdf (who.int)]

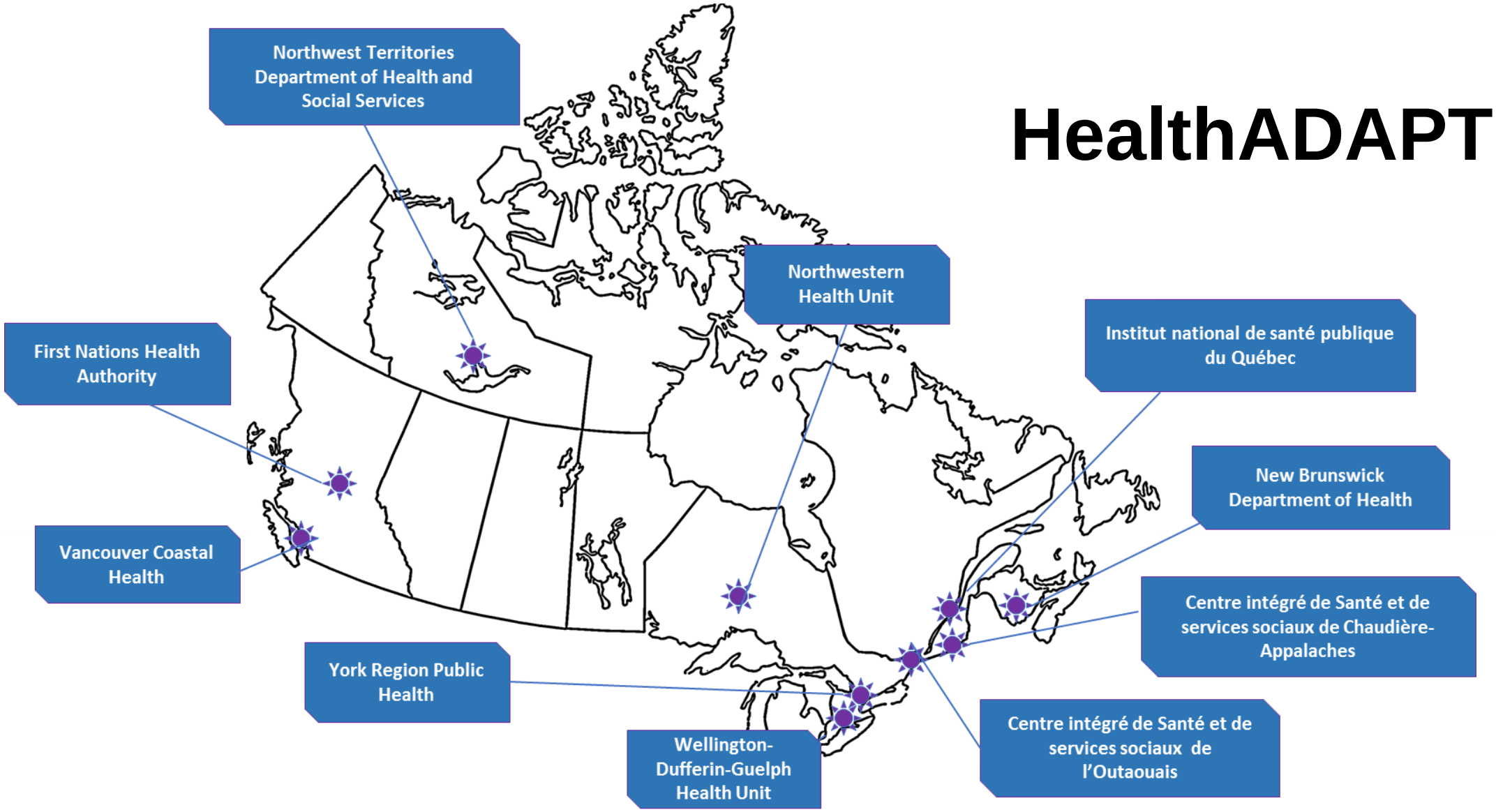
HealthADAPT: Capacity Building Program

A **multi-year program** introduced in 2019, to support 10 projects at local, regional, and provincial and territorial levels of the Canadian health sector to prepare for and respond to the impacts of climate change.

The projects selected represent the **diversity** across the country, including:

- Indigenous Peoples
- Newcomers
- Urban/rural/coastal communities
- Health sector spectrum (i.e., provincial/territorial ministries of health, regional/local health authorities, public health units)
- Official language communities

HealthADAPT



https://www.canada.ca/en/health-canada/programs/health-adapt.html

By employing mitigation strategies in line with keeping emissions under the RCP 6.0 (i.e. moderate emissions) scenario, Canada could **avoid around 5,200 premature deaths annually in 2050.**

This would benefit all provinces, particularly Ontario (2,900 avoided premature deaths) **and Québec** (1,500 avoided premature deaths).

Box 10.8 Reducing GHGs and increasing climate resilience at the University Health Network

The University Health Network (UHN) in Toronto, Ontario, has reduced its direct GHG emissions (from on-site combustion of natural gas) and indirect GHG emissions (from consumption of purchased electricity, heat, or steam) by 19% from 2010 to 2019 (Vanlint, 2019). Much of the savings arose from 214 energy projects completed between 2013 and 2018, saving UHN $18.9 million in utility costs (Vanlint, 2019). UHN is reducing carbon emissions by addressing the carbon intensity of its cooling system, which has been described as a significant source of global CO_2 equivalent emissions from the health sector (Kigali Cooling Efficiency Program, 2018). UHN has replaced traditional chillers with deep lake cooling technology, which uses water cooled by Lake Ontario, at some of its facilities. This new technology increases capacity, resilience, and reliability of UHN's chilled water system and saves more than $22 million over 20 years, 67 million L of water per year, 7 million kWh of electricity per year, and 269 Mt of GHG emissions per year (Vanlint, 2019).

Additional planned actions to reduce UHN's carbon footprint will include development of the world's largest raw wastewater energy transfer (WET) system at Toronto Western Hospital and the Krembil Discovery Tower. By harnessing thermal energy from wastewater flowing through the nearby campus sewer, it is estimated that the new WET system will result in a reduction of 250,000 metric tonnes of GHGs over the next 30 years (UHN, 2021).

Berry et al., 2022

Opportunities to Scale-Up Actions - Project Green Health Care

Dalhousie University - Halifax, NS & Saint John, NB - Dal Med Green Team - Launched an interdisciplinary green team network of healthcare learners and professionals across the Canadian Maritime provinces (www.dmss.ca/green-team.html).

Memorial University of Newfoundland - St. John's, NL - Code Cycle - Launching a healthcare active transportation campaign in St. John's.

Université of Montreal - Trois Rivieres, QC - Compost Project - Established a student-led composting program at their medical pavilion situated behind the Sainte-Marie Hospital.

McGill University - Gatineau, QC - Comunity Garden - Implemented a student-led community garden at the local long-term care home (Centres d'hébergement de soins de longue durée; CHSLD).

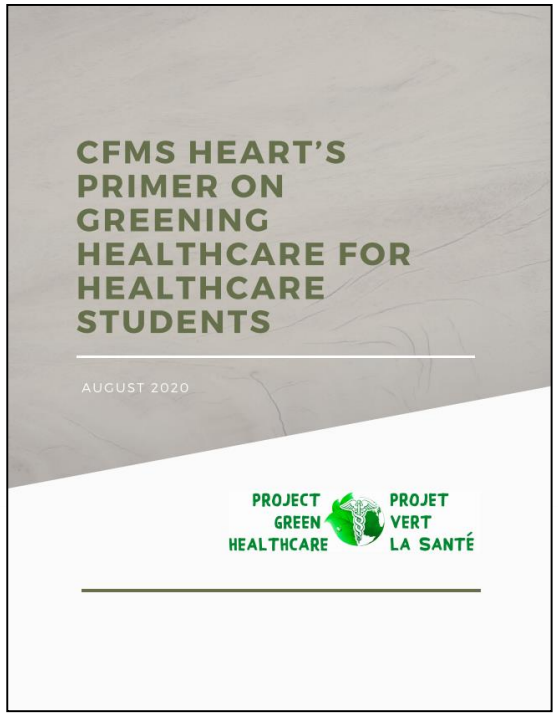
University of Ottawa - Ottawa, ON - Hospital Footprint - Conducted a carbon footprinting study of The Ottawa Hospital to estimate emissions and inform hospital quality improvement projects.

McMaster University - Hamilton, ON - Green Anesthetic gases - Designed point-of-care decision aids for anesthesiologists to reduce desflurane anesthetic gas use in operating rooms in Hamilton Health Sciences Center (HHSC).

University of Toronto - Toronto, ON - Trainee Environmental Education Program (TEEP) - Developed toolkits to inform healthcare trainees on hospital and ambulatory care recycling and waste streaming best practices.

University of Calgary - Calgary, AB - Climate Wise Slides - Developed evidence-based slides discussing what a physician needs to know at the nexus of climate change and health for ease of implementation in the undergraduate medical education curriculum (https://www.cwslides.com/slides)

University of British Columbia - Vancouver, BC - Choosing Wisely Hospital Medicine - Developing climate-centered Choosing Wisely modules for general surgeons and internists to highlight the environmental benefits of resource stewardship in hospital-based investigations and treatments.

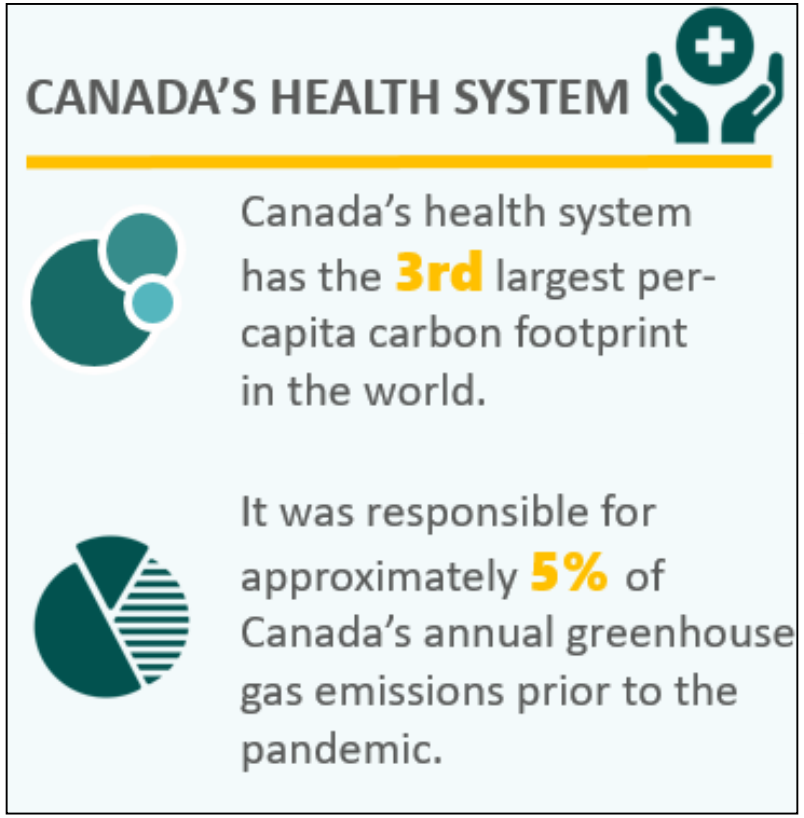


https://www.cfms.org/files/HEART/CFMS%20HEART%E2%80%99s%20Primer%20on%20Greening%20Healthcare%20for%20Healthcare%20Students_FINAL.pdf

Many health authorities and partners are scaling up efforts to prepare for climate change

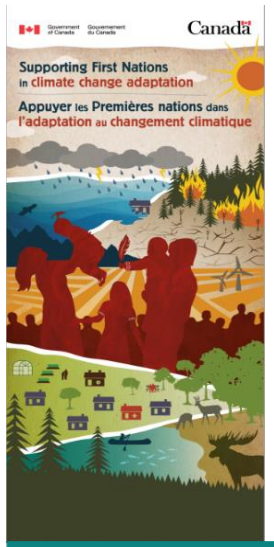
COP 26 Health Programme Commitments

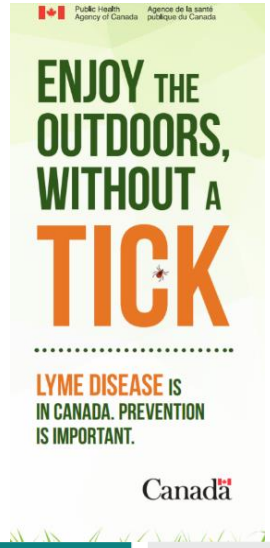
- Initiatives under the COP26 Health Programme include:
  - Building climate resilient health systems.
  - Developing low carbon sustainable health systems.
  - Adaptation research for health.
  - The inclusion of health priorities in Nationally Determined Contributions.
  - Raising the voice of health professionals as advocates for stronger ambition on climate change.



https://www.who.int/initiatives/cop26-health-programme

Canadian Federal Health Partners Actions on Climate Change





Health Canada	Extreme heat health impacts Climate-resilient health system capacity building and evidence
Public Health Agency of Canada	Food-, water-, vector-borne infectious diseases
Canadian Institutes of Health Research	Research on northern food security and Lyme disease
Canadian Food Inspection Agency	Plant and animal health and crop production programs
Indigenous Services Canada	Indigenous community-driven climate change capacity building and action

HC's **HealthADAPT** contribution program supports health authorities in assessing and addressing risks ($3M over four years supporting ten projects as a pilot).

Through HC's Heat Program**, 77% of health regions are working to take action to protect health from extreme heat**. Efforts include opening cooling centres, providing extreme heat health messaging to communities and working to support the most vulnerable.

ISC's **Climate Change and Health Adaptation Program** has funded 241 health adaptation projects across 182 First Nations and Inuit communities since 2008, supporting the development of solutions to climate change impacts at a community and regional level.

Established the **Canadian Lyme Disease Research Network** and issued research grants for multidisciplinary research in the area of **food and climate change in the Canadian North**.

Advanced action on vector-borne diseases, including Lyme disease, and launched the **Infectious Disease and Climate Change Fund** to support monitoring/surveillance and education/awareness activities ($2M annually and 31 projects to date).

Research Paper – Guidance for Scaling up Health Adaptation by Health Authorities

Key objectives:

- Develop a conceptual framework and guidance that applies the E4As approach to the issue of climate change and health adaptation in Canada
- Align with and support the health component of the National Adaptation Strategy under development
- Opportunity to apply the Climate Change and Health E4As approach for efforts to implement the objectives and actions identified in the NAS

Research Paper – Guidance for Scaling up Health Adaptation by Health Authorities

- Guidance for scaling up health adaptation to protect Canadians from the impacts of climate change through the E4As approach.
- The E4As Strategy was originally created by WHO to accelerate the achievement of the Sustainable Development Goals (SDGs).

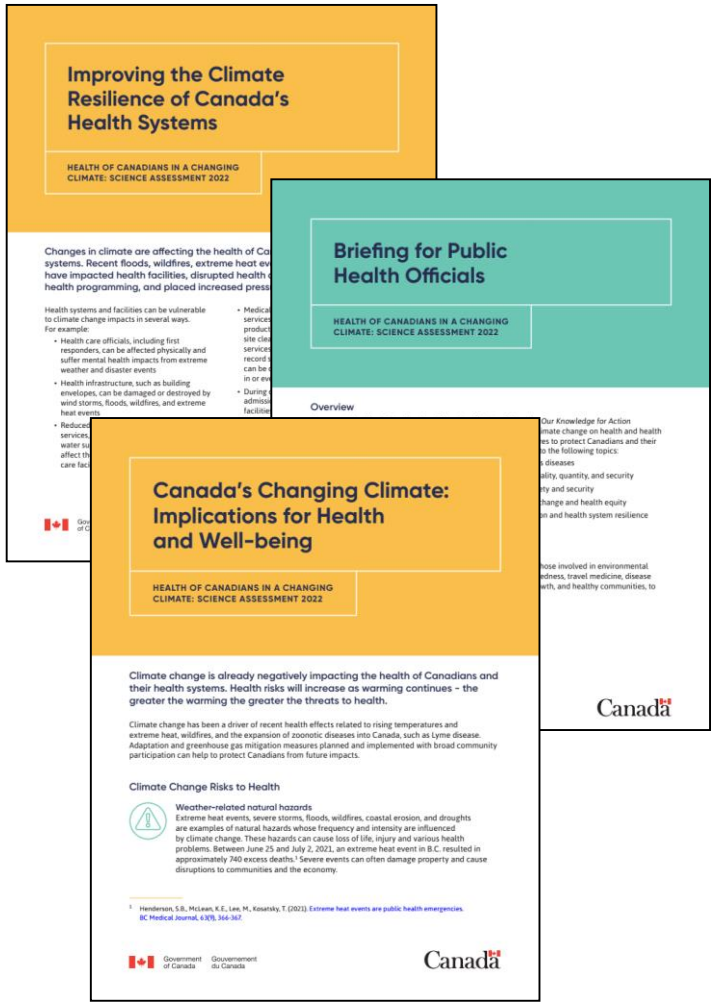
Communicating the Results of the CCHA 2022

National Collaborating Centre For Indigenous Health

nccih@unbc.ca

https://nccih.ca/Publications/lists/Publications/FS-Climate-Change-Health-Impacts-EN-Web-002.pdf

Health Canada



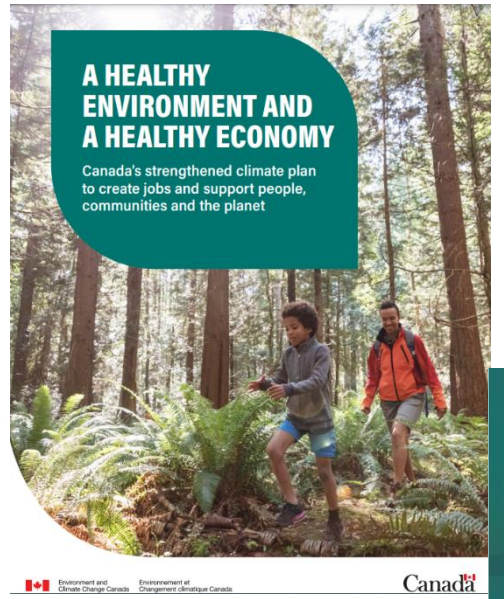
https://changingclimate.ca/health-in-a-changing-climate/newsroom/

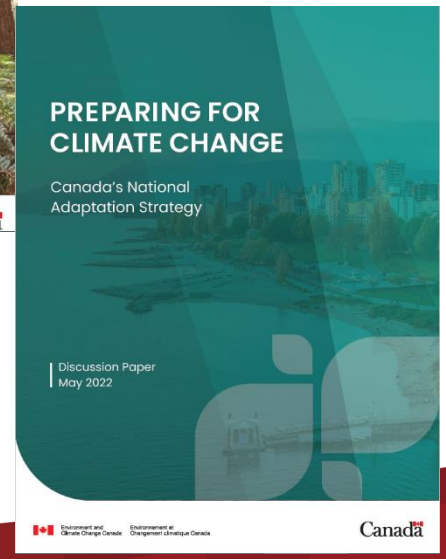
ICLEI

https://trello.com/b/CBWexNZ0/the-health-of-canadians-in-a-changing-climate-advancing-our-knowledge-for-action

National Climate Change Science Plan (Fall 2022)

- The **Science Plan** is now under development to implement CS2050. First version will outline priority action for next 5-10 years and be updated every 5 years to continue to:
  - Guide and prioritize national science investment and research planning.
  - Facilitate ongoing climate change science-policy dialogue to improve delivery of science results.
  - Support key initiatives - National Adaptation Strategy and Canada's Net-Zero Emissions Accountability Act.
  - Create a national multidisciplinary climate change science plan, aligning with international approaches (e.g., US Global Change Research Program, EU Joint Research Centre).
  - Be grounded by integrative societally relevant themes that inform both mitigation and adaptation.





How are you preparing for climate change?

- How will you regularly integrate new information about risks, vulnerabilities and adaptations into your activities?
- Will you be ready to respond to more climate and health surprises?
- How can you best foster key partnerships that will increase capacity to protect health?
- How will you safeguard the health of staff as risks increase?

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