

## Healthy Populations Institute Flagship Project Snapshot: Creating Sustainable Health Systems in a Climate Crisis

The following snapshot is based on the foundational work of Dr. Fiona Miller at the Centre for Sustainable Health Systems.

### The case for action

#### What is a sustainable health system?

A sustainable health system provides for the care needs of today without compromising the ability to provide for those needs in the future. Typically, we think of sustainability in economic terms. But sustainability is also about maintaining the environmental systems that sustain life, and about building social practices that enable all members of the human community to share in society's benefits.<sup>1</sup>

A sustainable health system is one that has a net positive impact on the environment and society and lives within society's economic means. In addition, a sustainable health system can adapt and be resilient in the face of new challenges, notably those that climate change will hasten. These include new patterns of disease as well as climate-related disturbances that threaten local communities and the health system's capacity to provide care and serve as a refuge in times of need.<sup>2</sup>

Finally, a sustainable health system leverages its role as a trusted social institution to support and mobilize its community in making the broader changes that are needed to transition to a sustainable world.

#### Why do we need to transition to sustainable health systems?

Climate change and other environmental challenges (biodiversity loss, pollution, soil depletion, etc.) are critical threats to health.<sup>3</sup> Climate change alone has been identified as "the biggest global health threat of the 21st century."<sup>4</sup> The Intergovernmental Panel on Climate Change (IPCC) has identified the effects on health resulting from climate change as:

- Increases in atmospheric temperature are projected to increase morbidity and mortality due to heat-related illnesses such as heat stroke, heat edema, heat rash, heat stress, acute cardiovascular disease and renal disease;
- Reduced air quality from GHGs will likely increase morbidity and mortality due to asthma, ischemic heart disease, stroke, acute lower respiratory infections, lung cancer and chronic obstructive pulmonary disease;
- Vector-borne diseases are increasing in prevalence and are likely to continue their advance as warming temperatures expand the geographic range of insects and other species; and
- Extreme weather events, including flooding, droughts, cyclones, hurricanes and wildfires, are expected to increase in frequency and intensity. Changes to weather and extreme weather events threaten food security, housing and infrastructure and result in lost income for those affected by the event. Climatic instability is expected to undermine crop yields, Indigenous hunting and gathering practices, and fishery production.

According to the IPCC, the world has little more than 10 years – until 2030 – to make major modifications in how we live, work and play if we are to avoid the kind of catastrophic changes that will make the maintenance of complex human societies impossible.<sup>5</sup>

Canada is a relatively small contributor to global greenhouse gas emissions (GHGs), (it was responsible for approximately 1.7% of total global emissions in 2014).<sup>6</sup> Yet Canada is still one of the top ten global emitters as a country,

and Canadians are among the highest per capita emitters in the world.<sup>7</sup> At the same time, Canada has made ambitious commitments to cut emissions, and while all targets have thus far been missed, the country has articulated a non-binding strategy for 2050 of “deep decarbonization” of the economy (>80%), in accordance with the international scientific consensus about the scale of cuts needed to stay within a 1.5-degree mean increase in global temperature.<sup>8</sup>

These modifications *are* possible, and they can be undertaken in ways that enhance society in general and healthcare provision in particular; in this way, the challenge of tackling climate change may actually be “the greatest global opportunity of the 21<sup>st</sup> century”<sup>9</sup> as many of the policies needed to fight climate change could also produce health benefits, reduce [health care costs](#), [create economic development](#) and improve social cohesion and equity in our communities.

## The time to act is now.

### How do health systems contribute to the problem?

The health system has a large role to play in this undertaking, because despite its mission to support health, its practices are actually part of the problem. With large physical facilities that operate 24-7, care arrangements that foster substantial travel by patients, caregivers and providers, and a profound reliance on carbon-intensive and polluting technologies and other products (drugs, devices, disposables, etc), health systems are significant contributors to greenhouse gas emissions and broader environmental impacts, including through air pollution.<sup>10</sup>

In recent years, the attention towards the contribution of anesthetic gases to global climate change and the environment has increased, with evidence that the emission of volatile anesthetics are contributing to ozone depletion in the stratosphere and to greenhouse warming in the troposphere.<sup>11</sup> The asthma carbon footprint has calculated to be ‘as big as eating meat’, with metered-dose inhalers accounting for nearly 4% of NHS greenhouse gas emissions because they contain fluorinated gases (F-gases) as propellants, which are potent greenhouse gases.<sup>12</sup> A recent study commissioned by Public Health England measured the carbon emissions and calculated the carbon footprint of dental services. It found that unlike the NHS wider health service footprint (where the carbon emissions contribution of travel is smaller), the highest proportion of emissions in dentistry is from travel (64.5%).<sup>13</sup>

In mitigating their negative environmental impacts, health systems can improve the health of their local communities and transform the globalized supply chains upon which they depend. In addition to mitigation, health systems can adapt and be resilient in the face of the challenges that are already underway. Finally, health systems can serve as leaders in efforts to build more sustainable societies, mobilizing patients, staff, and wider communities for change.

While the enormous environmental challenges facing the human community have seized public attention, sustainability challenges are not solely environmental in nature. Social challenges too, such as accelerating economic inequality, corrode the capacity for stable and successful communities.<sup>14</sup> Moreover, social and environmental challenges are profoundly interconnected. Environmental damages are disproportionately created by the better off (countries, individuals), while the risks and harms they engender will disproportionately be felt by the least advantaged (countries, individuals). Vulnerabilities of all sorts, including socio-economic disadvantage and pre-existing health conditions, increase the risk of experiencing climate-associated harms.<sup>15</sup> Equitable social relations are key to both limiting and managing environmental challenges.<sup>16</sup>

## If this target is to be met, health systems must be involved.



## References

---

- <sup>1</sup> Sustainable Development Unit for NHS England and Public Health England. Reducing the use of natural resources in health and social care: 2018 report. 2018. [www.sduhealth.org.uk/policy-strategy/reporting/natural-resource-footprint-2018.aspx](http://www.sduhealth.org.uk/policy-strategy/reporting/natural-resource-footprint-2018.aspx)
- <sup>2</sup> World Health Organization. (2015). *Operational framework for building climate resilient health systems*. World Health Organization. Available from: [http://apps.who.int/iris/bitstream/10665/189951/1/9789241565073\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/189951/1/9789241565073_eng.pdf?ua=1); Bouley, Timothy; Roschnik, Sonia; Karliner, Josh; Wilburn, Susan; Slotterback, Scott; Guenther, Robin; Orris, Peter; Kasper, Toby; Platzer, Barbara Louise; Torgeson, Kris. 2017. *Climate-smart healthcare: low-carbon and resilience strategies for the health sector (English)*. Investing in climate change and health series. Washington, D.C. : World Bank Group. <http://documents.worldbank.org/curated/en/322251495434571418/Climate-smart-healthcare-low-carbon-and-resilience-strategies-for-the-health-sector>; Haines A, Ebi K. The Imperative for Climate Action to Protect Health. *New England Journal of Medicine*. 2019 Jan 17;380(3):263-73
- <sup>3</sup> Intergovernmental panel on climate change (IPCC). IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, 2018 ; Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, ADVANCE UNEDITED VERSION, 6 May 2019; <https://www.ipbes.net/news/ipbes-global-assessment-summary-policymakers-pdf>, accessed May 13, 2019
- <sup>4</sup> Costello A, Abbas M, Allen A, Ball S, Bell S, Bellamy R, Friel S, Groce N, Johnson A, Kett M, Lee M. Managing the health effects of climate change. *The Lancet*. 2009 May 16;373(9676):1693-733.
- <sup>5</sup> Intergovernmental panel on climate change (IPCC). IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty, 2018
- <sup>6</sup> World Resources Institute (WRI). 2018. Climate Watch; cited in: Perrotta, Kim. Editor. Climate Change Toolkit for Health Professionals. Produced by the Canadian Association of Physicians for the Environment (CAPE). April 2019
- <sup>7</sup> Environment and Climate Change Canada (ECCC). 2018. National Inventory Report 1990-2016: Greenhouse Gas Sources and Sinks in Canada — Canada’s Submission to the United Nations Framework Convention on Climate Change, Parts 1-3. [NIR 2018]. Submitted April 13, 2018. <https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018>; cited in: Perrotta, Kim. Editor. Climate Change Toolkit for Health Professionals. Produced by the Canadian Association of Physicians for the Environment (CAPE). April 2019
- <sup>8</sup> Canada. 2016a. Canada’s Mid-Century Long-Term Low-Greenhouse Gas Development Strategy. November 17, 2016. <https://unfccc.int/process/the-paris-agreement/long-term-strategies>; cited in: Perrotta, Kim. Editor. Climate Change Toolkit for Health Professionals. Produced by the Canadian Association of Physicians for the Environment (CAPE). April 2019
- <sup>9</sup> Watts N, Adger WN, Agnolucci P, Blackstock J, Byass P, Cai W, Chaytor S, Colbourn T, Collins M, Cooper A, Cox PM. Health and climate change: policy responses to protect public health. *The Lancet*. 2015 Nov 7;386(10006):1861-914.
- <sup>10</sup> Eckelman MJ, Sherman JD, MacNeill AJ. Life cycle environmental emissions and health damages from the Canadian healthcare system: An economic-environmental-epidemiological analysis. *PLoS medicine*. 2018 Jul 31;15(7):e1002623; Eckelman MJ, Sherman JD. Estimated Global Disease Burden From US Health Care Sector Greenhouse Gas Emissions. *American journal of public health*. 2018 Apr;108(S2):S120-2.
- <sup>11</sup> Yasny, J, White, J. 2012. Environmental Implications of Anesthetic Gases. *Anesth Prog* 59:154–158 2012.

---

<sup>12</sup> Wilkinson, AJK et al. The costs of switching to low global-warming potential inhalers. An economic and carbon footprint analysis of NHS prescription data in England. *BMJ Open*; 30 Oct 2019; DOI: [bmjopen-2018-028763](https://doi.org/10.1136/bmjopen-2018-028763) <https://bmjopen.bmj.com/content/9/10/e028763>

<sup>13</sup> 1PHE and CSH 'Carbon modelling within dentistry: Towards a sustainable future' Accessed August 2018. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/724777/Carbon\\_modelling\\_within\\_dentistry.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/724777/Carbon_modelling_within_dentistry.pdf)

<sup>14</sup> Wilkinson, Richard, and Kate Pickett. "The spirit level." *Why equality is better for* (2010).

<sup>15</sup> Perrotta, Kim. Editor. *Climate Change Toolkit for Health Professionals*. Produced by the Canadian Association of Physicians for the Environment (CAPE). April 2019

<sup>16</sup> McKibben, Bill. *Falter: Has the Human Game Begun to Play Itself Out?*. Black Inc., 2019.