

# Decarbonising healthcare

## A discussion paper

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- **Clare Shine**, Director and CEO, Cambridge Institute for Sustainability Leadership
- **Abheet Solomon**, Senior Programme Manager, UNICEF

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# About this paper

The impact of climate change on health is now broadly recognised, with experts calling it both a public health and an equity crisis, as it disproportionately affects people living in low- and middle-income countries and exacerbates existing socioeconomic inequalities.<sup>1</sup> The healthcare sector is vulnerable to climate change, but it is also a significant contributor – it produces almost 5% of global greenhouse gas emissions.<sup>2</sup> With this in mind, over 50 countries around the world have pledged to decarbonise and improve the climate resilience of their health systems.

Efforts to decarbonise health systems require an integrated vision for sustainability, always ensuring that the quality of patient care is not compromised and that resources are used as efficiently as possible in any proposed strategies. The resilience of health systems needs to be improved to protect care delivery from the impact of climate change. Urban healthcare settings may be a logical starting point for action. Cities offer the opportunity for concerted action on decarbonisation, as they are places where health, transport, housing, urban planning and other sectors intersect.

This discussion paper explores these themes. It is based on initial findings from a structured literature review and will be developed into a more in-depth policy paper, supported by insights from a multidisciplinary panel of experts. The policy paper will be published later in 2022.

# The impact of climate change on health

**There is now broad recognition that climate change has a drastic impact on health.**

Rising greenhouse gas emissions, which are at the root of climate change, affect health in multiple ways.<sup>3</sup> They are linked to extreme heat and air pollution,<sup>3</sup> which are associated with multiple conditions, including respiratory diseases and heart disease<sup>4</sup> (*Box 1*). Globally, outdoor and household air pollution led to approximately 7 million deaths in 2016.<sup>5</sup> In addition, extreme weather events, declining crop yields, and climate-driven migration and displacement compromise the health of affected populations.<sup>1</sup>

**Taking action on climate change is imperative to address existing inequalities.** Globally, climate change disproportionately affects people living in low- and middle-income countries,<sup>1</sup> which are typically the lowest emitters of greenhouse gases.<sup>6</sup> It is estimated that the richest 1% of the world's population (63 million people) produce double the emissions of the poorest 50% of the world's population (3.1 billion people).<sup>7</sup> In 2016, a staggering 94% of pollution-related deaths occurred in low- and middle-income countries.<sup>8</sup> Failure to act on climate change will also impede access to universal healthcare, by increasing barriers to care and the burden of disease on overwhelmed health systems, particularly for populations impacted by migration and displacement driven by climate change.<sup>1</sup>

**Within communities, climate change has a disproportionate impact on people from socially disadvantaged backgrounds.** Climate change exacerbates existing vulnerability to ill health.<sup>1 9</sup> The risk of poor health induced by climate change is greatest in older people, children and people with underlying conditions,<sup>1</sup> such as respiratory disease, heart disease, diabetes, Alzheimer's disease and mental illness.<sup>10</sup> There are gender differences, too: on average, more women die in natural disasters than men, especially in countries where women have lower socioeconomic status.<sup>11</sup> The negative impact of climate change on women may extend to those who are pregnant: low birth weight and preterm births are associated with exposure to higher temperatures.<sup>4</sup>

### Box 1. Extreme heat and air pollution: their impact on population health and vulnerable populations

**Extreme heat:** Extended exposure to high temperatures puts an increasing physiological stress on the body, exacerbating some of the leading causes of death globally, such as respiratory disease, heart disease, diabetes and kidney disease.<sup>12</sup>

**Air pollution:** Exposure to outdoor air pollution was the world's fifth leading risk factor for death in 2015.<sup>13</sup> Short-term exposure to air pollution can exacerbate respiratory diseases, increasing hospitalisations and mortality.<sup>14</sup> It is also linked to increased risk of heart attacks and strokes.<sup>15</sup> Worsening air pollution is also associated with increasing the risk of lung cancer.<sup>16</sup>

#### Effects on vulnerable populations

**Older adults:** Older adults are particularly vulnerable to extreme heat. Global heat-related deaths in adults over 65 increased by 53.7% between 2000–2004 and 2014–2018.<sup>17</sup>

**Children:** Children are less able to regulate their body temperature than adults and suffer more during heatwaves.<sup>18</sup> Currently, approximately 820 million children are 'highly exposed' to heatwaves (as defined by UNICEF), with 920 million being highly exposed to water scarcity.<sup>18</sup> Children are also particularly vulnerable to air pollution as their lungs are still developing.<sup>18</sup> Approximately two billion children live in areas where pollution exceeds standards set by the World Health Organization.<sup>18</sup>

# Health systems and the environment: a reciprocal relationship

**Health systems are affected by climate change – but they also contribute to the crisis through greenhouse gas emissions.** Health systems can be significantly affected by climate change – such as through power shortages due to extreme weather events,<sup>3</sup> floods or fires – and need to ensure they are climate resistant. Health workers are also vulnerable to the effects of climate change, with a potential impact on workforce capacity.<sup>19</sup> At the same time, the healthcare sector has a considerable environmental footprint: it accounts for almost 5% of global greenhouse gas emissions.<sup>2</sup> On a per capita basis, the top healthcare emitters are the US, Canada, Switzerland and Australia.<sup>20</sup> Following discussions at the recent United Nations Climate Change Conference in Glasgow (COP26), a group of 50 countries have pledged to decarbonise their health systems, while ensuring they are climate resilient.<sup>21</sup> Fourteen countries have committed to achieving net zero carbon emissions by 2050.<sup>21</sup>

**Some health systems are already moving towards bold sustainability measures.** In 2020, the National Health Service (NHS) in England became the first national health system to set net zero emission targets.<sup>22</sup> Others are following suit, building sustainability targets into their strategic plans. So far, these are being pioneered in health systems in the states and territories of Australia,<sup>23-25</sup> and by some healthcare providers in the US<sup>26 27</sup> and South Africa.<sup>28</sup> Several public–private partnerships, both global and national, have also gathered pace in recent years, bringing together leaders from health systems, governments, civic society and the medical community to develop common strategies. Such initiatives include Health Care Without Harm,<sup>29</sup> the Sustainable Markets Initiative,<sup>30</sup> Healthy Heart Africa,<sup>31</sup> the Sustainable Healthcare Coalition<sup>32</sup> and the Centre for Sustainable Healthcare, among others.<sup>33</sup>

# Decarbonising health systems: what can be done?

**Health systems are complex, and decarbonisation strategies must take a systems approach to have meaningful impact.** Efforts to improve sustainability in health systems should look at every step involved in care – from the supply chain and healthcare delivery to training of healthcare professionals.<sup>3</sup> Appropriate evaluation frameworks, using reliable metrics, should also be embedded into health system performance goals. They can help drive accountability for action, monitor for any unintended consequences of actions taken, and encourage ownership for decarbonisation strategies across all facets of healthcare.

**When planning decarbonisation strategies, it is essential to never lose sight of the fact that healthcare is fundamentally about people.** Improving the quality of care and individual outcomes must always be at the forefront of any plans to decarbonise the health system. There may sometimes be a need for trade-offs in encouraging low-carbon solutions for patient care; these trade-offs need to be acknowledged and discussed with patients. For example, NHS England has suggested increasing the use of ‘greener’ inhalers for asthma;<sup>34</sup> however, these may not be appropriate for all people, and switching without taking into account each person’s preferences could lead to poorer asthma control.<sup>35</sup>

With these considerations in mind, some possible areas for action include the following:

- **Prevention.** Investment in prevention has been recognised as a central pillar of health system sustainability. Preventing illnesses from developing in the first place avoids the need for people to seek care,<sup>36</sup> and that results in lower costs for health systems as well as lower emissions.<sup>37</sup> Enhancing prevention of non-communicable diseases (NCDs), the leading cause of mortality worldwide, is particularly important: 80% of cases of premature heart disease, stroke and diabetes are considered preventable.<sup>38</sup> Prioritising early detection and diagnosis may also contribute to decarbonisation;<sup>34</sup> in cancer care, early detection means cancer may be caught at a curable stage, enabling more effective treatment.<sup>39</sup> Other actions, such as providing more green spaces, can promote physical activity, which reduces the risk of ill health with the added benefit of reducing air pollution.<sup>40</sup>
- **Personalised and targeted care.** Personalised approaches that use individual data (e.g. biomarkers) to tailor treatment to the person means that people are given treatments that are most likely to benefit them.<sup>41</sup> This can help conserve resources while also making care as effective as possible.<sup>41</sup> The benefits will be felt by patients, health systems and the environment.
- **Digital approaches.** Remote delivery of care – through telemedicine and remote monitoring – can avoid use of expensive, carbon-emitting, infrastructure-intensive resources.<sup>20 42</sup> Remote monitoring may be particularly important in the ongoing management of NCDs,<sup>42</sup> ensuring continuity of care for individuals and providing early warnings for worsening disease, which if addressed could prevent hospitalisations.<sup>43</sup> Digital approaches have found particular application in cancer care, with demonstrable impact on efficiency and patient outcomes.<sup>44</sup> They can also improve facilitation of clinical trials, aiding recruitment, patient access and capture of trial data.<sup>45</sup>
- **A greater emphasis on community-based care.** Promoting community-based care may improve the patient experience<sup>34</sup> by reducing potential physical and financial barriers in access to care, such as transport cost and lost time from work. This could also reduce the carbon footprint of healthcare by reducing travel emissions<sup>36</sup> and being less resource-intensive.<sup>42</sup>

- **Efficient care pathway design.** The design of care pathways can play an important role in their carbon footprint. Healthcare delivery is often fragmented, leading to inefficiencies,<sup>37</sup> waste and high costs for health systems; this compromises the quality of care people receive.<sup>46</sup> Leaner models of care, with improved coordination, streamlined clinical decision-making and targeted interventions, can make more effective use of available resources and reduce the carbon footprint of healthcare settings at the same time.<sup>47</sup>
- **Facilities and infrastructure.** Where countries are able to invest in new healthcare infrastructure, approaches should privilege, where feasible, sustainable sourcing of materials; use of renewable energy; more energy-efficient buildings; and facilities promoting active transport (e.g. walking or cycling).<sup>46</sup> Healthcare settings could also incorporate more green space to promote wellbeing and environmental sustainability.<sup>48, 49</sup>
- **The supply chain.** Supply chains make a significant contribution to carbon emissions through the production, transport and disposal of goods and services (e.g. medicines, medical devices, food and hospital equipment).<sup>20</sup> Health systems could support lower-carbon supply chains by ensuring manufacturers are decarbonising their own processes<sup>34</sup> with verifiable targets, such as the Net Zero Corporate Standard defined by the Science Based Targets initiative.<sup>50</sup> Suppliers could also provide evidence of their progress in line with these targets.
- **Transport.** Moving to low-carbon travel and transport strategies can have the health benefits of reducing air pollution.<sup>46</sup> Healthcare facilities could use electric emergency vehicles, although a comprehensive charging infrastructure would be needed.<sup>34</sup> Facilities could also be planned around nearby public transportation, supporting 'cleaner' patient and staff travel.<sup>46</sup> Providing public and active transport options can help more people access healthcare facilities easily and has clear benefits to health and the environment.<sup>34</sup>

# The way forward for decarbonisation of health systems: important considerations for governments and policymakers

**We are at an exciting juncture, where governments around the world must now move from words to actions, developing concrete strategies to realise their commitments towards decarbonising and improving resilience of their health systems.** However, mitigating against the effects of climate change and reducing the carbon footprint of healthcare are only part of the challenge facing health systems. The COVID-19 pandemic has shed light on the confluence of factors that threaten health system sustainability. These include the rise of NCDs, widening health inequalities, growing pressures on resources and workforce shortages – not to mention the lingering impact of the pandemic itself. Initiatives such as the Partnership for Health System Sustainability and Resilience (PHSSR) have been established specifically to help ensure health systems can withstand future crises.<sup>51</sup>

**It follows that decarbonisation will not succeed if delivered in siloes – it needs to be integrated into broader efforts to enhance the sustainability and resilience of health systems overall.** A comprehensive approach to building sustainable healthcare is needed. The goals of environmental sustainability, more efficient use of resources to deliver better outcomes for patients, and reducing health inequalities should all be tackled together.

**It is also important to recognise the interconnectivity between health and other sectors – and foster joint approaches to environmental sustainability.** Actions on healthcare need to be placed within a wider social context, realising the health benefits of more environmentally sustainable transport, housing and other sectors. This joint approach is integral to the United Nation's Sustainable Development Goals (SDGs), which recognise the benefits of acting on health, healthcare, social inequalities and the environment, to build prosperity across our societies.<sup>52</sup>

**To drive healthcare decarbonisation at pace and at scale, urban environments may be a key place to begin.** Globally, 75% of energy-related greenhouse gas emissions are associated with cities,<sup>53</sup> and city residents are at an increased risk of the adverse health effects of climate change.<sup>54</sup> This makes cities an ideal entry point for sustainability approaches; they can be a nexus for sustainable healthcare transition. Cities thrive on innovation and have local-level stakeholders able to drive change, taking a cross-sectoral approach. There may also be opportunities to build on the momentum behind city-focused action from existing initiatives, such as the World Health Organization Healthy Cities programme,<sup>55</sup> the City Cancer Challenge,<sup>56</sup> C40 Cities<sup>57</sup> and the Eurocities network<sup>58</sup> – and create a global network of local leaders focused on acting on the intersection between health and climate.

**A final consideration is that, while decarbonising healthcare must be a concerted global effort, national contexts vary.** It is important to acknowledge the imbalance in the risks and resources to enact change between low- and middle-income and high-income countries. The most urgent priority in many of the former will be to build into their health systems resilience to the effects of climate change, with fewer resources remaining for decarbonisation. With this in mind, an appropriate balance must be struck in each country, and globally, between decarbonisation and actions to improve climate resilience to protect healthcare delivery.

**As we look to COP27, we have an important challenge to put in place lasting measures to decrease the carbon footprint of our health systems.** To achieve improved health of individuals and the planet, and reduce social inequalities exacerbated by climate change, we need both global collaboration and local action – giving due consideration to the broader healthcare context in each country. We need to build synergies between different sectors within our societies and work closely with our local communities. Our goal should be to ensure these efforts directly improve people's health and wellbeing, and ultimately drive greater social and economic prosperity.

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The Health Policy Partnership Ltd.  
68–69 St Martin's Lane  
London WC2N 4JS, UK  
+44 (0) 203 857 3647  
[www.healthpolicypartnership.com](http://www.healthpolicypartnership.com)

This discussion paper was written by The Health Policy Partnership and AstraZeneca.  
We welcome any questions or comments about the issues raised here. Please email Suzanne Wait at [suzanne.wait@hpolicy.com](mailto:suzanne.wait@hpolicy.com)

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