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HEALTH IN THE CLIMATE CRISIS

A GUIDE FOR HEALTH LEADERS

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ONE WORLD
OUR HEALTH

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HEALTH IN THE CLIMATE CRISIS
A GUIDE FOR HEALTH LEADERS

WISH 2020 Forum on Climate Change and Health

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FOREWORD

The COVID-19 pandemic has catapulted health and scientific leaders into the center of urgent intersectoral efforts to secure global economic and social stability. Health leaders now need to play a similar role for the environmental health agenda – in particular global warming, but also the many associated issues that it raises, from housing, to food, to nature loss. The pandemic has widened economic disparities and exacerbated health inequalities worldwide. The climate crisis threatens to do the same, and we must act now to mitigate this as countries slowly start to move into their recovery phases.

Health leaders have a unique combination of means, motive and mission to tackle the climate crisis – both by protecting people from its worst impacts and reducing the threat at source. As models of care worldwide focus more on health promotion and prevention, health leaders have a powerful voice as authentic, authoritative and accountable defenders of public health and the co-benefits of health and climate action. The powerful institutions that these leaders are a part of, in parallel with other sectors that they have long-standing partnerships with, have the ability to exert positive influence over patients and staff. More importantly, we speak the language of human health – the most effective lens for colleagues in all sectors to get their message across about our stewardship of the planet.

This report does not seek to turn health leaders into planetary scientists, but rather to make the science clear through the use of a public health perspective. It encourages health leaders to work across sectors, and to show that, in doing so – through 10 practical actions – we can achieve more for health and climate justice together than would be possible by either of these alone.

Climate change is one of the primary themes of the WISH 2020 research agenda. In addition to this report, WISH partnered with the BMJ to commission two collections of peer reviewed articles on the effects of climate change on infectious diseases and the growing challenges of dry cities.

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EXECUTIVE SUMMARY

The health of people and the health of the planet are inextricably linked. Now, as evidence of the devastating effects of climate change on human health shifts from scientific projections to the daily news, health leaders are realizing their responsibility toward this crisis. This includes mitigating the worst effects, preparing their communities, and responding to the impacts as they come. But what does this mean in practice? This report seeks to equip health leaders with an understanding of what they need to know about the threats and opportunities that climate change creates for health. It outlines their unique role as innovators and influencers, and 10 key actions they can prioritize to respond.

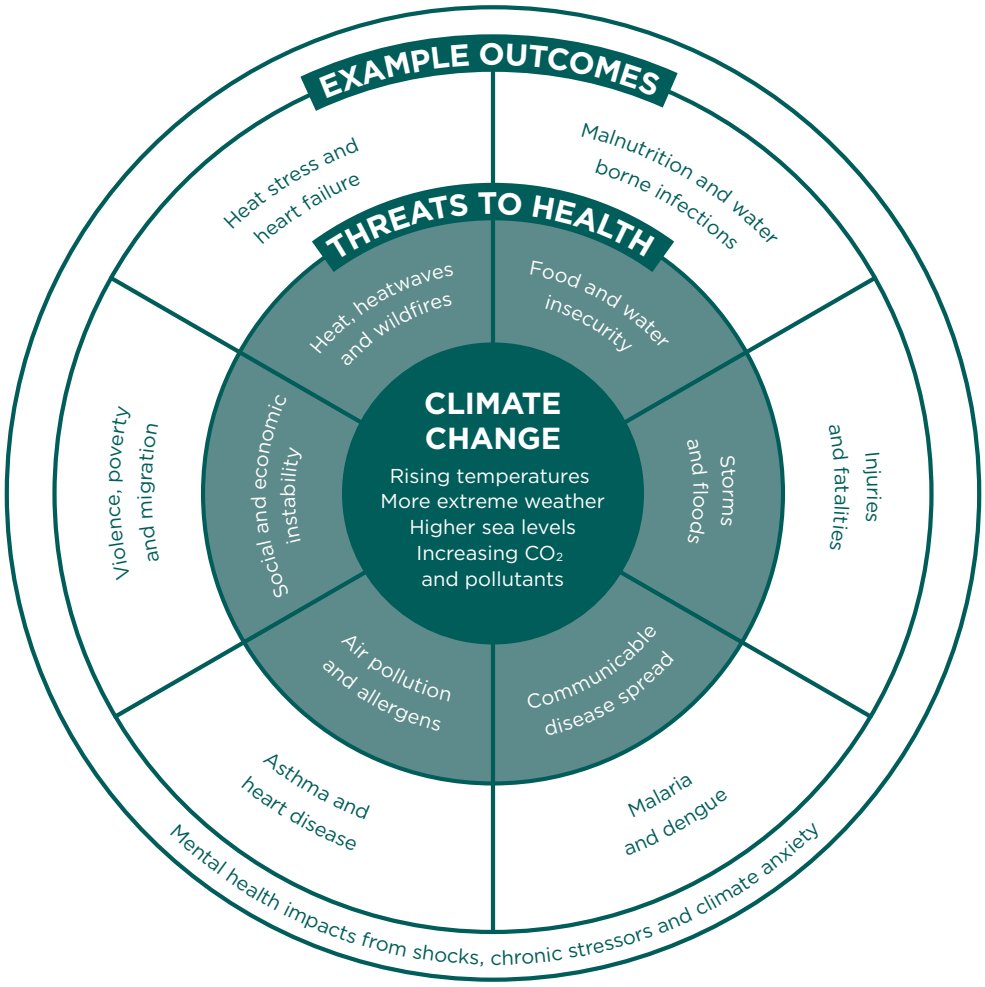
There was a time when, for many working in healthcare, the climate crisis was someone else's problem – the impacts would happen far away, or long into the future. Recent events from wildfires, storms, heatwaves and flooding have shown this to be untrue. As this report demonstrates, the health impacts of climate change are already evident in hospital and clinic waiting rooms every day, adding an increasing burden to already stretched health systems. Protecting the public as well as health systems and staff from these dangers is the responsibility – and opportunity – of every health leader: from health ministers to local service administrators. By doing so, they will create powerful new cross-sector alliances that will benefit their own healthcare systems and patients. The future of high-quality healthcare is resilient, low-carbon healthcare.

While not thought attributable to climate change, the COVID-19 pandemic gives a foretaste of this challenge. First, because it offers a 'dress rehearsal' for similarly exponential events, in which waiting until the worst impacts to happen before acting means that it is already too late. Second, because it shows the only way to achieve health security is for health leaders to position themselves at the forefront of inter-sectoral alliances. Third, that many of the most effective strategies to respond to climate change and COVID-19 are shared – in particular, innovation and a rebuilding of community-level public health infrastructure. Finally, that for all the devastating health and financial consequences of the pandemic, the resulting stimulus packages and recovery policies offer countries an opportunity to accelerate the creation of health-promoting low-carbon societies, rather than simply resurrect the same obsolete models of economy and care.

Climate change is a human health emergency

Climate change is having increasingly frequent, widespread and severe negative impacts on people's physical and mental health. This report presents a framework highlighting the six main categories of threat caused by climate change that are impacting on the global burden of death and disease (see Figure 1).

Figure 1. Health impacts of climate change



Source: Adapted from Centers for Disease Control and Prevention[1]

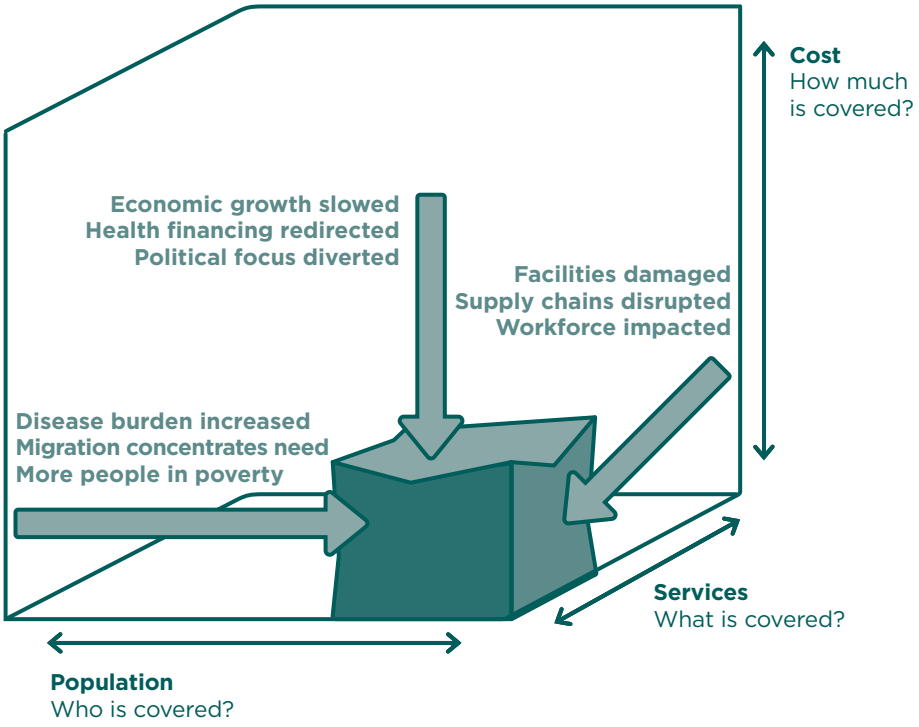
These threats are especially important for groups already at greater risk, such as women and children, the elderly, those with pre-existing conditions, people in low-resource settings, and indigenous communities. Many of these effects can be mitigated to reduce harm – at least for the next decade or so. After this, if emissions are not curbed, the threats begin to cascade beyond the ability of current technologies to defend against.

The imperative for ‘climate-smart’ healthcare

Health systems in high-, middle- and low-income countries are all vulnerable to climate change, whether through direct destruction of facilities, indirect disruption to supply chains, or being overwhelmed by sudden climate shocks. By far the most fragile systems are in countries currently working toward universal health coverage (UHC). Progress is likely to decelerate, or even reverse, if current climate change trends continue.

Figure 2 illustrates some of these effects – demonstrating the threats that all health system leaders face, but especially those in developing countries.

Figure 2. ‘Compressing the cube’: Climate change will make universal health coverage less attainable and less sustainable

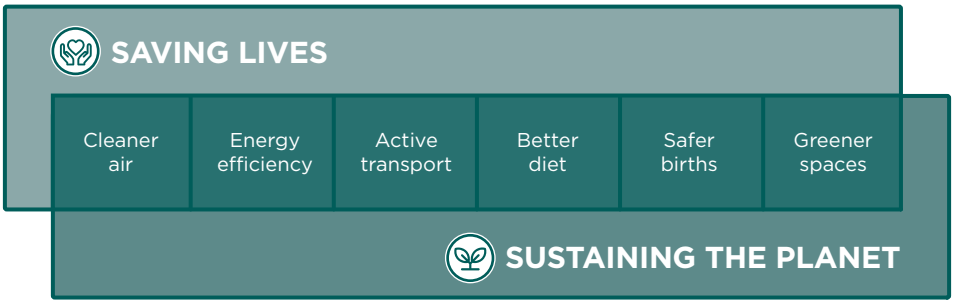


Source: Adapted from WHO (2010)[2]

A first step is to mitigate climate change by reducing healthcare’s 4.4 percent share of global emissions. But, to protect systems and societies from the environmental changes already taking place, this needs to be done in tandem with climate adaptation measures.[3] These dual imperatives have given rise to the concept of ‘climate-smart’ healthcare, which seeks to make systems simultaneously greener, more resilient and higher quality

through actions such as waste minimization, energy self-sufficiency, and shifting resources from curative to preventive care. These co-benefits for health and sustainability are summarized in Figure 3.

Figure 3. The co-benefits of health and climate action



Health leaders as innovators and influencers

Evidence of the co-benefits created by climate-smart innovations is wide-ranging, and often beyond what the health or environment sectors can achieve alone. Health leaders have a unique role in driving this positive agenda of low-carbon, health-promoting societies:

- They are among society's most authentic, authoritative and accountable messengers – with public trust currently even higher as a result of the COVID-19 pandemic.

- Framing climate action in health terms generates less resistance and greater motivation to act among the public, making health leaders the gateway through which all other sectors can convert their messages into action.

- With 170 million workers and $8 trillion in spending, healthcare has tremendous market power at its disposal.

10 key actions for health leaders

No other profession has the motivation and the means of healthcare to lead the transition to environmentally sustainable, health-promoting societies – especially when allied with other sectors. This report proposes 10 key actions that health leaders should prioritize, presented as an 'index card' of high-impact, practical suggestions that will offer significant benefits for the wellbeing of people and the planet.

INDEX CARD OF CLIMATE CHANGE ACTION FOR HEALTH LEADERS

Be the change:

1. Ensure that climate change resilience plans are in place, funded and acted on – including for multiple, simultaneous climate shocks.
2. Switch your facilities to the greenest possible systems of heating, lighting and electricity.
3. Be uncompromising about reducing waste and minimizing resource use across clinical operations and catering, and about the wider issues of how services are designed and delivered.
4. Require suppliers to: tell you about their environmental footprint and climate resilience; set a commitment to improving these; and report back on key milestones.
5. Publish a comprehensive baseline of your organization's environmental impact and commit to significant reductions every year.

Lead the change:

6. Mobilize your workforce to speak up and act on climate change, nature and equity – as individuals, within their organizations, and publicly.
7. Speak out about the adaptation measures needed across the health system and wider society to protect people's mental and physical health from climate threats.
8. Invest in developing innovations for climate-smart healthcare and divest from fossil fuels.
9. Build or join cross-sector coalitions that are working toward collective action on climate and nature, combining health's contribution with a diversity of other interests.
10. Highlight and act on the positive health impacts of improving air quality, as well as the negative impacts of fossil fuel power generation and subsidies.

Health leaders need not wait for national governments to drive this agenda – rather, we must step forward audaciously, anticipating the future and demonstrating the changes needed to protect human and environmental health.

Three final recommendations are given for the health and climate communities to strengthen international co-operation:

1. **To the health community:** We invite health system leaders keen to implement the Index Card of Climate Change Action for Health Leaders to join an ongoing sub-community of WISH (see Section 4).

2. **To the climate community:** We call on country representatives of the upcoming UN Climate Change Conference of the Parties (COP26) in 2021 to give health and health leaders a central role, including at least one health expert on each negotiating team, and to make health a core theme of the summit.

3. **To governments:** We urge governments to put health and climate leaders at the heart of post-COVID recovery plans, to ensure that the recovery from this pandemic accelerates the transition to health-promoting, low-carbon societies.

SECTION 1. CLIMATE CHANGE IS A HUMAN HEALTH EMERGENCY

Much like the human body, the earth's climate is a sensitive balance of several interdependent systems. When one element of these systems changes it can cause cascading effects across the entire ecosystem – think of how high blood pressure leads to symptoms as varying as stroke, loss of eyesight and kidney damage.

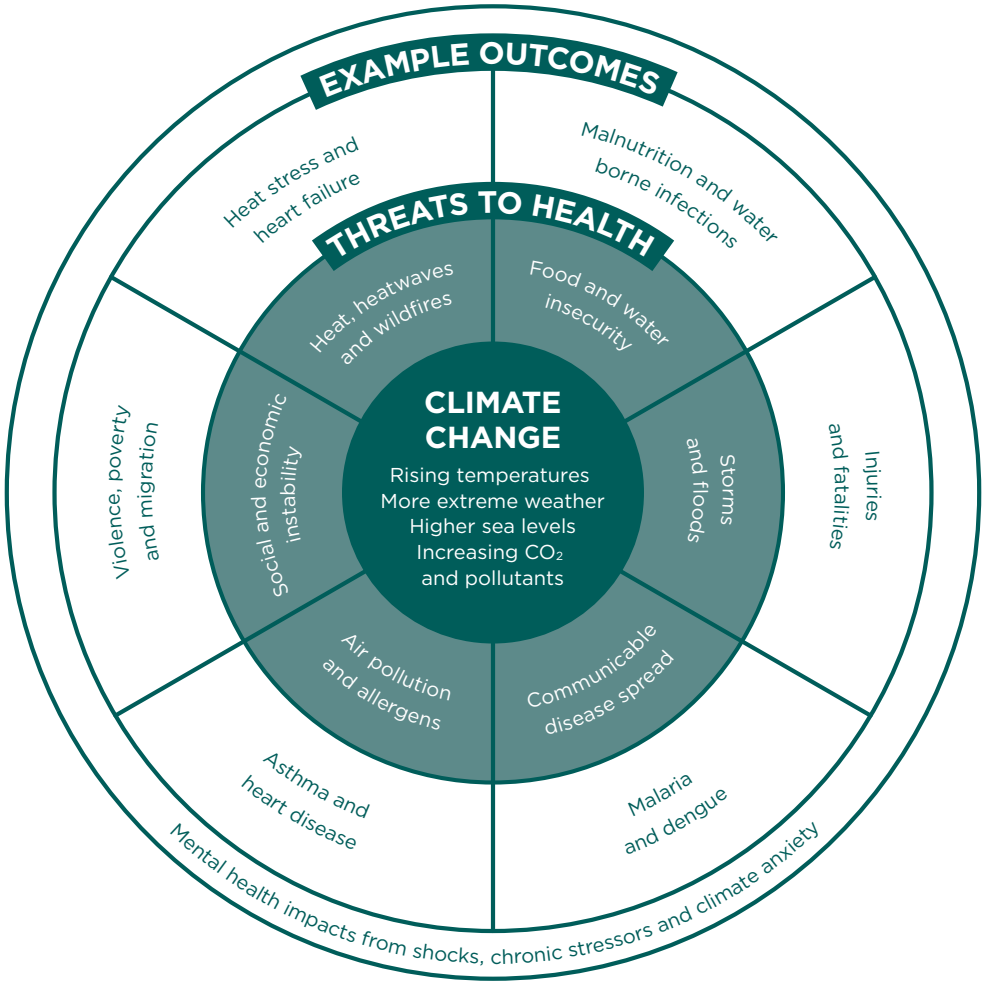
As a result of humanity's activities over the past 150 years, our earth's ecosystem is now out of balance. Specifically, the release of greenhouse gases, such as carbon dioxide, has led to more heat being trapped by the earth's atmosphere, and a gradual increase in temperatures across the globe. Average temperatures have already risen by 1 degree Celsius since 1850 (most of this since 1970), and based on current trends will rise by an average of 2 degrees Celsius by 2050 and up to 4.3 degrees by 2100 (with some regions rising by more than 10 degrees).[4]

These changes are already having cascading effects that will grow exponentially over the coming century – from drought and wildfires in places where the air is able to retain more moisture, to more extreme floods and storms in humid regions where evaporation and rainfall increase. And, of course, rising sea levels from melting ice and warming waters – projected to rise by 30–50 centimeters by 2050, and 2 meters or more by 2100.[5]

Like many chronic health conditions, climate change grew silently for decades in terms of the human health consequences, with only mild or moderate 'symptoms'. This period is now over – with the health impacts of this climate crisis already evident in hospital and clinic waiting rooms every day. The impact of the resulting heat is seen in worsening cardiovascular disease, increased spread of infectious diseases, climate-induced migration from destabilized regions, and the multiple effects on our mental health – especially in young people (see Box 2).[6]

The effects of future climatic changes on morbidity and premature mortality will be wide-ranging and dramatic. There have been 467 separate pathways traced through which climate change is likely to impact on our daily lives in the years to come. Of these, 27 are direct threats to human health, and many more will affect wider social determinants such as housing and income loss.[7] Our framework (see Figure 4) attempts to simplify this highly complex picture into the six categories of threat caused by climate change that healthcare leaders should be aware of.

Figure 4. Health impacts of climate change



Source: Adapted from Centers for Disease Control and Prevention[8]

Heat, heatwaves and wildfires

Eight of the 10 hottest years on record have occurred in the past decade, with a steady increase in the number of dangerously hot days predicted in the coming years. This will continue to the point whereby, in some regions, the coolest day in the summer by the end of the century could be warmer than the hottest day today.[9,10] Extreme heat will particularly impact on city dwellers and older people, in existing warmer regions such as Africa, Latin America and South East Asia, and through more sudden heatwaves in cooler regions such as Europe, which may see 90,000 additional deaths each year from heatwaves by 2050.[11] (See WISH 2020 Healthy Dry Cities Report for further information.) Although wildfires often generate much attention (see Box 1), less visible impacts may turn out to be the most damaging in terms of health and wealth. For example, more than a billion people will be unable to safely work outdoors during the hottest month of the year by the late part of this century.[12]

See WISH 2020 Healthy Dry Cities Report.

Box 1. The health impacts of the 'Black Summer' of wildfires

Between June 2019 and February 2020, Australia experienced one of its worst wildfires, with a continuous outbreak of uncontrollable bushfires burning some 180,000 km^2 of land across the country. The direct effects of the fires included the deaths of more than 30 people and up to a billion animals, 6,000 buildings destroyed, and reduced GDP growth of 0.2 to 0.5 percent.[13] Climate change is estimated to have already made extreme fires of this scale 30 percent more likely to occur.[14]

However, the true scale of the health impacts became apparent through indirect effects.[15] With 35 percent of people in New South Wales reporting breathing problems during the month of January, it is likely that the true scale of the health impact will take many years to understand.[16] Long-term mental health effects are also expected to be evident up to five years after the event, with the government recovery package including a US$50 million investment for psychological support.[17]

Food and water insecurity

Rising temperatures and changes in the chemistry of oceans and the air will have a destabilizing effect on the quality and quantity of food in many of the world's poorest countries.[18,19] Reduced yields of staple crops, fewer fish and a decline in the nutritional value of many foods will lead to a 61 percent projected increase in child stunting in South Asia by 2050 (31 to 55 percent across Sub-Saharan Africa).[20] This is further compounded by a projected 10 percent increase in diarrheal diseases through water contamination and other foodborne infections.[21] Wealthier countries may even see a rise in obesity, as vegetables and legumes become more expensive to grow and less nutrient rich.[22]

Storms and floods

Extreme weather events such as hurricanes are already increasing in frequency and intensity, with once-in-a-century sea-level surges almost certain to become annual events in many parts of the world by 2050.[23] In coastal areas, 600 million people currently live less than 10 meters above sea level, posing an existential threat to many major cities and small island nations.[24] While tropical and low-lying areas will be most severely affected, they will not be alone. In Europe, for example, it is projected that extreme weather disasters such as severe storms, river and coastal flooding could affect two-thirds of the population by 2100, compared to just 5 percent in recent decades.[25]

Box 2. Unique threats – and opportunities – for mental health

There is increasing awareness and evidence about the growing effects of climate change on mental health. Impacts fall into two broad categories: harms as a result of acute events (such as floods, storms and heatwaves); and long-term anxiety, depression and stress felt indirectly in response to the worsening climate crisis.[26] (See WISH 2020 Healthy Dry Cities Report for further information.)

See WISH 2020 Healthy Dry Cities Report.

The psychological impacts of extreme events can be among their longest-lasting legacies on affected communities. One evidence review by the Federal US Global Change Research Program (USGRCP) found that impacts in the aftermath of climate disasters include increases in depression, substance misuse, post-traumatic stress disorders and suicide.[27] There was an additional, accumulating psychological toll on people facing recurring disasters – such as those living in flood plains or areas vulnerable to hurricanes.

Beyond these directly traceable effects, there is emerging research demonstrating a growing threat of long-term anxiety surrounding the climate crisis – especially among younger people who will live to see some of its most devastating effects.[28,29] Stress, hopelessness, depression and guilt are all reported, with some studies suggesting that the majority of young people in the UK and US are experiencing some loss of wellbeing as a result of climate concerns.[30] However, many people see this rising 'eco-anxiety' as an opportunity if these feelings can be directed toward positive action.[31] Furthermore, improvements to population-level mental health are some of the most valuable quick wins from climate change mitigations and adaptations, through greener spaces, more active transport, cleaner air and better housing, which have all been shown to enhance mental health and wellbeing.[32] (See WISH 2018 Anxiety and Depression Report for further information)

See WISH 2018 Anxiety and Depression Report pages 8–9.

Spread of communicable diseases

Projecting the overall impact of climate change on communicable diseases is complex, as some vector-borne diseases will significantly increase their transmission range, while others will shrink. The best estimates are that some 200 million additional people will be put at risk of malaria by 2050 – and there will be more suitable conditions for dengue, Zika virus and various other diseases – principally in Africa, Latin America and South East Asia.[33] However, these threats are particularly amenable to public

health interventions such as bed nets, so eventual outcomes may be less dramatic.[34] (See WISH 2020 Climate Change and Communicable Diseases Report for further information.)

See WISH 2020 Climate Change and Communicable Diseases Report.

Air pollution and allergens

Fossil fuel use for electricity, transport and manufacturing produces a wide range of climate-altering pollutants beyond carbon dioxide, almost all of which are responsible for increased death and disability through cardio-vascular, respiratory and other chronic diseases.[35] Removing fossil fuels would avoid between 3 million and 4.2 million deaths per year, as well as potential reductions in several common mental health disorders.[36,37] Longer-term benefits of tackling climate change include reducing the spread of allergy-inducing plants.[38]

Social and economic instability

The sum of the above effects is having a growing impact on global economic growth and social stability.[39] Extreme climate events carry a huge financial cost – $166 billion in 2018 alone – further compounded by lost labor productivity.[40] The bulk of total financial losses will be in richer countries, but the relative burden will be felt in low- and middle-income countries, where an additional 100 million people may be pushed into extreme poverty by 2030 as a result of climate change, in the absence of preventive action.[41] As land is lost to sea level rise, and conflicts break out over scarcer fresh water and arable land, some 140 million additional people are forecast to migrate by 2050 – further pressuring those regions that escape some of climate change's more immediate threats.[42]

While any individual threat from the six categories will impact on certain countries and sub-groups more than others (see Figure 7), the net effect on human health will disproportionately be borne by those already at greater risk, including:

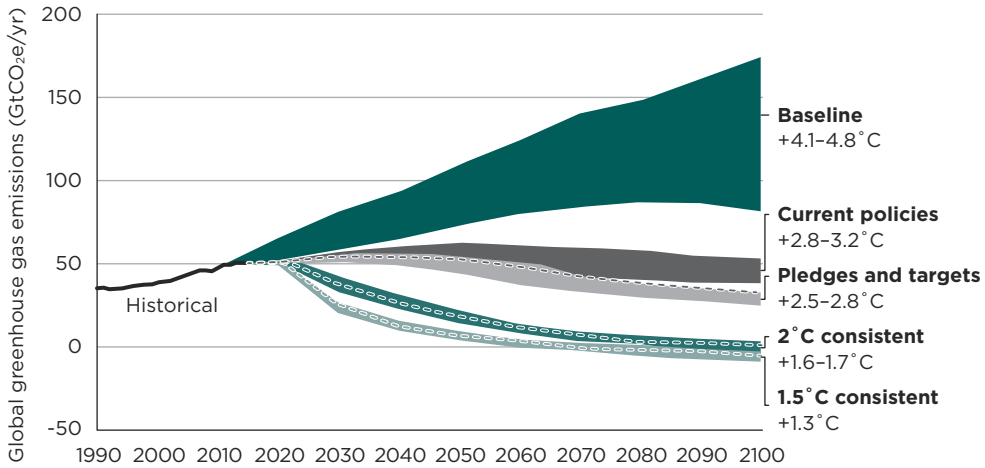
- those on low incomes and in low-resource settings, who have more precarious incomes and rely on weaker infrastructure.
- women and children, who are at greater risk of food- and water-borne illnesses and communicable diseases.
- the elderly, who are most sensitive to heatwaves.
- indigenous communities, whose livelihoods and cultures are often more sensitive to changes in the natural environment.
- those with pre-existing or multiple health conditions.

Up until 2 degrees of warming, the overall impacts will be to exacerbate existing health threats that these at-risk groups face. Beyond this point, several non-linear (that is, exponential) tipping points are reached. These include temperature thresholds above which crops cannot reliably grow, and climatic points of no return, such as the release of vast quantities of methane, a potent greenhouse gas, from melting permafrost.[43] These would stretch the limits of even wealthy populations to adapt to, as multiple threats layer on top of one another to test protective infrastructure to breaking point – as East Africa faced in 2020 with the 'triple menace' of COVID-19, flooding, and the worst locust swarms in decades.[44,45,46] This is before taking into account the wider picture of degradation of the natural world over this period: from soil degradation, to ocean acidification, biodiversity loss, and the collapse in numbers of key pollinating insects.

This 'beyond 2 degrees Celsius' world is not inevitable, but the world's current path will not avoid it. There are encouraging signs from some countries and industries – particularly the rapid rise in low-carbon power generation in recent years (now 34 percent of electricity production globally), and inter-governmental commitments, such as the Paris Agreement, to reduce emissions.[47] However, countries are not currently on course to meet these existing targets and, even if they did, this would only achieve half of the change required to avoid breaching 2 degrees by 2030 (see Figure 5).[48] Until the COVID-19 pandemic, total global emissions were still rising (by 0.6 percent in 2019), when they need to halve by 2030 and reach net zero by 2050 to keep climate change to 1.5 degrees Celsius.[49]

While the pandemic had a dramatic short-term effect on global emissions – as much as 30 percent in the month of April 2020 – these impacts look unlikely to sustain, and without green stimulus packages will have a negligible effect on the long-term trajectory of global heating.[50]

Figure 5. Global greenhouse gas emissions 2010 to 2020



Source: Climate Action Tracker[51]

CASE STUDY 1. LOCAL HEALTH SYSTEM AND COMMUNITY RESPONSES TO CLIMATE CHANGE

The Philippines

The Philippines is one of the world's most climate-vulnerable countries, with a long history of natural calamities. In 2013, the country was struck by Typhoon Haiyan, the strongest typhoon to hit land in recorded history, claiming more than 7,000 lives and affecting nearly 20 million people.

As frontline communities begin to confront the initial manifestations of slow-onset climate change, such as sea level rise and prolonged droughts, they have no choice but to prepare and adapt. These subtle changes are expected to generate myriad health effects, including resurgence of infectious diseases, reversal of nutritional gains, and salinization of drinking water, which will place additional burdens on already under-resourced local health systems.

Today, many Philippine municipalities are 'mainstreaming' climate change adaptation into health planning and operations. For instance, *barangay* (community) health workers are now trained in basic emergency management and detection of climate-sensitive infectious diseases such as dengue fever. Nonetheless, additional financial resources will be needed to address other challenges such as sustaining medicine supply and disaster-proofing of clinics. Meanwhile, the local health sector is also involved in municipal climate and disaster planning to ensure that health programs are coherent with other sectors such as agriculture and environmental protection. Ultimately, cross-sectoral action for health and climate is only successful when there is strong leadership at mayoral level, and meaningful participation among members of the broader community – especially the health sector.

Short films about these individual community adaptation efforts are now being documented and shared online at: voices.ph.

SECTION 2. CLIMATE CHANGE IS A THREAT TO HEALTH SYSTEMS

Healthcare systems are major contributors to climate change, while being especially vulnerable to its effects. This creates an imperative for health leaders in high-, middle- and low-income countries to simultaneously adapt to the increasing hazards posed to their services, while reducing their own emissions to tackle the problem at source.

The impacts of climate change on health systems are multidimensional, and include threats to:

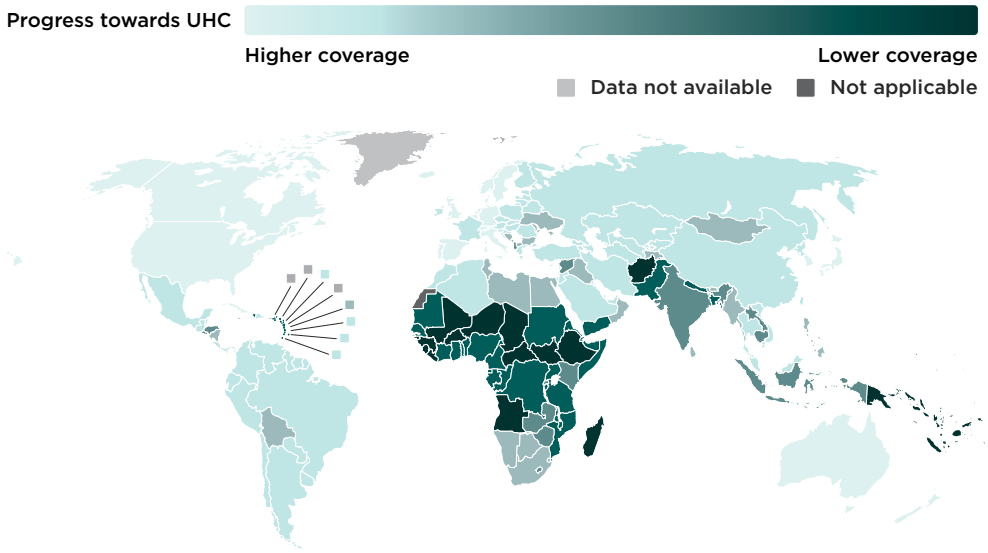
- **Services:** Healthcare infrastructure faces direct damage and destruction from floods, storms and wildfires – as well as personal threats to health workers. Indirect disruption from events elsewhere can also occur through impact on supply chains and utilities.

- **Population:** Climate change will increase the overall burden of disease. In addition, migration of the worst affected populations will displace need rapidly and unpredictably into health systems that may not be equipped to cope.

- **Cost:** Strong health systems require sustainable financing and a sustained political commitment – both of which come under threat when countries are also facing major climate-related threats. Rebuilding efforts after extreme events can absorb a great deal of public money that might otherwise have gone toward health. However, the long-term economic effects are likely to be even more damaging: with 133 billion work hours lost globally to climate change in 2018 alone, the downward pressure on some countries' ability to finance accessible healthcare will be significant.[52]

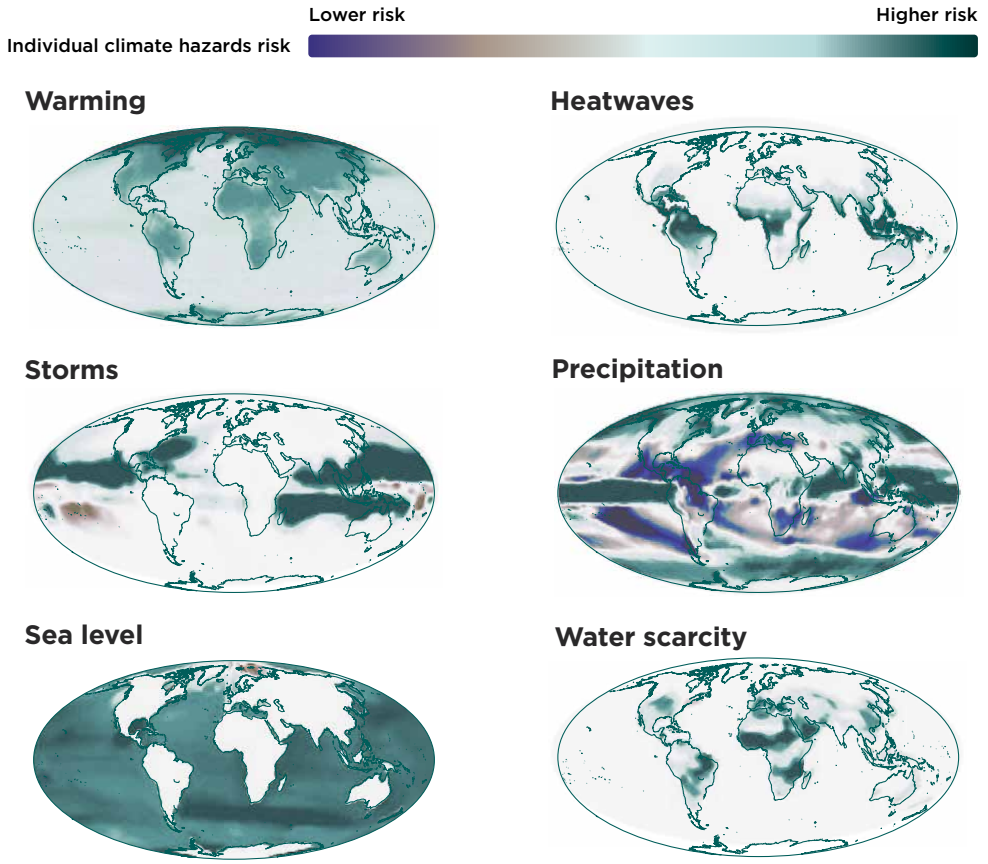
These threats exist for health systems in all countries. However, the distribution of countries facing the most severe climate threats shows an unmistakable correlation with those also needing to make the most progress toward UHC. Figures 6 and 7 show the global distribution of individual climate threat levels alongside current UHC progress.

Figure 6. Global heatmap of universal health coverage



Source: World Health Organization. Universal health coverage index of essential service coverage

Figure 7. Global heatmap of future climate hazards

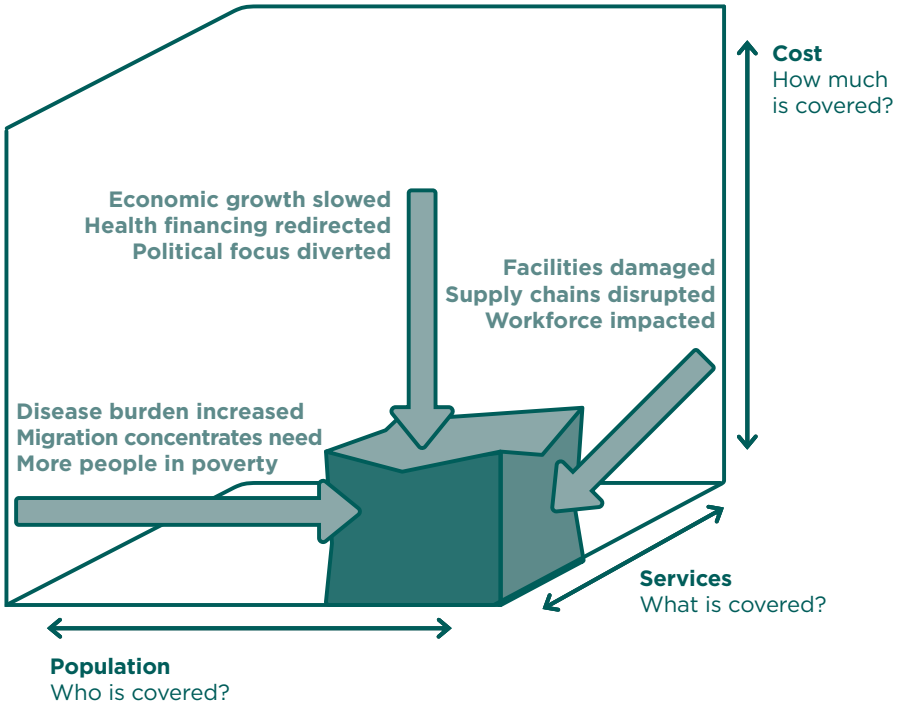


Source: Mora et al.[53, 54]

For this reason, climate change has been predicted to severely hinder the ability of countries working toward 'health for all' to achieve their goals, decelerating and even reversing progress to 2030 and beyond.[55]

Figure 8 demonstrates this by mapping the threats to the World Health Organization's (WHO's) UHC 'cube', illustrating that climate change will make UHC less attainable and less sustainable. All health leaders have the responsibility to limit climate change and protect the most vulnerable from its worst impacts.

Figure 8. 'Compressing the cube': Climate change will make universal health coverage less attainable and less sustainable



Source: Adapted from WHO (2010)[56]

Health leaders have a duty to ensure that their services continue to operate, even after the most severe climate events. Fortunately, adaptation is possible for most risks over the next decade or so (see Case studies 1, 2 and 3). Awareness of this need is growing, with 51 of 101 countries surveyed by *The Lancet* reporting that they had a national health and climate change plan.[57] However, only half of these said that plans had been implemented to a significant degree. It is also likely that much of this planning is isolated, and based on single threats, rather than the increasingly likely scenario of several occurring at once.

CASE STUDY 2. SMART HOSPITALS PROGRAM

St Lucia

St Lucia has set out an ambitious path toward universal health coverage, with plans for a new national health insurance scheme to cover its 180,000 citizens and minimum guarantees over timeliness and access. However, high exposure to natural disasters and environmental threats put this at risk. Recently a rising number of intense storms have devastated health systems in neighboring islands. Rather than waiting for a 'direct hit', the government is preparing now.

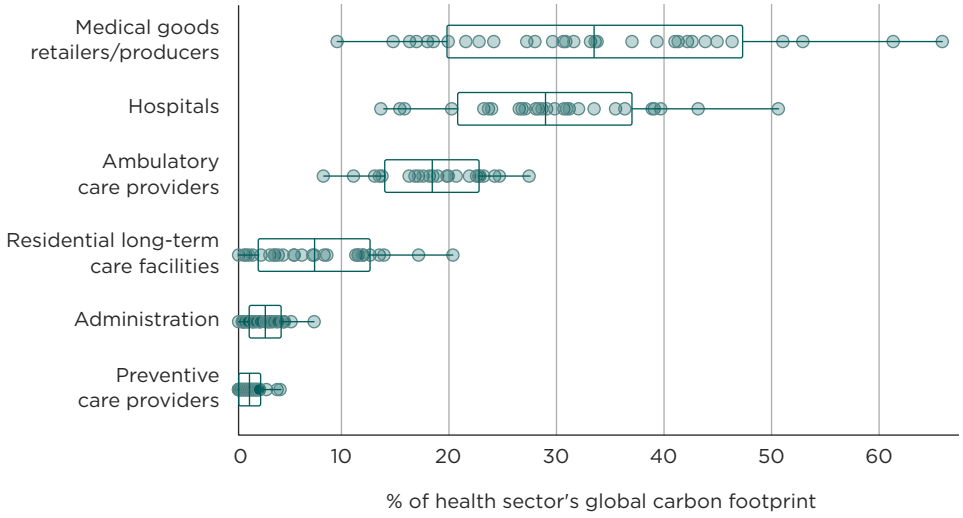
Through the Pan American Health Organization (PAHO) Smart Hospitals Program, funded by UK Aid, half of the island's health facilities have received climate-smart upgrades since 2018, which will soon reach 100 percent. Three larger facilities have received comprehensive renovations to make them greener and more resilient, including: strengthening roofing, foundations, and columns; solar electricity installation, standby generators and hurricane shutters; and improved air quality, water and energy use.

Just as impactful are the interventions carried out across 12 smaller clinics, which include more efficient plumbing and electrics, as well as solar hot water, rainwater harvesting and better flood drainage. To ensure maximum health and environmental benefit from the program, an econometric tool was used to compare the cost, safety and carbon impact of proposed measures across each facility.

Healthcare is a major contributor to climate change

Healthcare is responsible for around 4.6 percent of global greenhouse gas emissions, with richer countries significantly higher (for example, 7 percent in Australia, and 10 percent in the US).[58,59,60] Without substantial course correction, this is set to rise as health spending increases from $10 trillion to $14 trillion by 2030 and $21 trillion by 2050.[61]

Figure 9. Health's carbon footprint by care segment



Source: OECD data in *Environmental Research Letters*, 2019[62]

In the breakdown of healthcare's overall emissions footprint (see Figure 9), there is an unmistakable correlation between the greenest forms of healthcare and those generally thought to offer the greatest value for money. Hospitals are highly carbon intensive and, across the Organisation for Economic Co-operation and Development (OECD), have a footprint roughly double that of ambulatory care, and more than 30 times that of preventive care.[63] However, even more important than health's own facilities and service are its buying decision. By one estimate, the supply chain makes up as much as 71 percent of healthcare's emissions.[64]

Can healthcare become 'climate smart'?

The twin imperatives to make healthcare systems resilient to climate change and to reduce their role in causing it has given rise to the concept of climate-smart healthcare, which recognizes:[65]

1. **The need for climate-resilient health systems:** Even high-income health systems are insufficiently prepared to respond to major climate-related shocks, and low- and middle-income countries are especially fragile.

2. **The need for low-carbon health systems:** Even the best adaptation measures will be insufficient if the scale of the threat from climate change is not reduced.

Fortunately, there is increasing evidence that these two agendas are interlinked, meaning that action on one contributes to the other. This is true for:

- incremental actions, such as waste minimization (including over-prescribing), retrofitting buildings to be more efficient, and strengthening supply chains.

- transitional actions, such as factoring longer-term vulnerabilities from climate threats and population health needs into future health service planning, and leveraging healthcare, economic and political weight to catalyze similar changes among others (for example, urban planning, food and energy).

- transformational actions, such as shifting the overall model of care from hospital-based services to virtual, home, and community-based care, and from a curative focus to prevention and health promotion. (See WISH 2020 Mental Health and Digital Technologies Report for additional case studies of transformational actions.)

See WISH 2020 Mental Health and Digital Technologies Report.

A climate-resilient, low-carbon healthcare transformation will be an immense challenge but, throughout the COVID-19 crisis, health organizations have shown themselves to be capable of innovating and adapting at great speed when the need arises. A similar effort is now needed for climate-smart healthcare – leveraging the broad alliances that formed across health, transport, food, and economic leaders to fight the pandemic and redirecting these toward the creation of flexible, resilient, wellbeing-focused systems that can drive forward the many 'win-win' improvements described in the next chapter.

CASE STUDY 3. CLIMATE-RELATED DISRUPTION TO ESSENTIAL MEDICINES AND SUPPLIES

Puerto Rico

The supply chains for essential goods – especially pharmaceuticals – are increasingly sensitive to climate-related shocks, as manufacturing has become leaner, more specialized, and with more complex webs of suppliers distributed across the globe.[66]

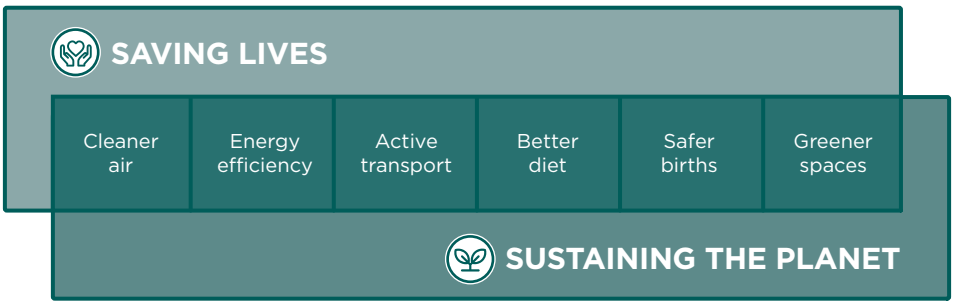
Hurricane Maria's impact on Puerto Rico in 2017 was one major wake-up call to the vulnerabilities in the global supply of drugs and devices. Alongside the devastating impact to the country as a whole – killing 3,000 people and causing critical damage to healthcare infrastructure that remains to this day – the storm also caused a major shock to the global pharmaceutical supply chain. [67,68] With around 50 pharmaceutical manufacturing facilities, the island is a major life sciences hub, with 8 percent of US medications produced there. Baxter Healthcare, a leading producer of intravenous saline, was especially badly hit, resulting in some US hospitals experiencing shortages in the months following the storm.[69]

Life sciences firms are now attempting to improve their resilience – strengthening facilities, spreading production across more locations, and working with suppliers to fix vulnerabilities proactively. Many are simultaneously working on mitigation efforts, including commitments for 100 percent sourcing of renewable power from AstraZeneca (by 2025), Novo Nordisk (2030), Merck & Co. (2040) and Johnson & Johnson (2050).

SECTION 3. HEALTH LEADERS AS INNOVATORS AND INFLUENCERS: SAVING LIVES AND SUSTAINING THE PLANET

Faced with the scale of the climate crisis, many health leaders may respond by thinking: "I already spend all day saving lives – and now you want me to save the planet as well?"[70] Perhaps this is understandable, but it fails to acknowledge that the health and environmental agendas are mutually reinforcing. A low-carbon economy is a health-promoting economy and vice versa, especially for those already facing greater climate and health risks. These co-benefits for health and sustainability are illustrated in Figure 10.

Figure 10. The co-benefits of health and climate action



Cleaner air

Outdoor air pollution cuts three years from global average life spans, with over 80 percent of cities worldwide exceeding WHO's safety threshold for air quality.[71,72] Fossil fuel consumption from electricity generation and industry are the primary sources of this pollution – as well as the leading global source of greenhouse gases. Initiatives to reduce indoor air pollution also carry significant co-benefits, such as improvements to housing quality, which can improve insulation and reduce exposure to molds. Also, the replacement of solid-fuel cook stoves – still used by 3 billion people globally – which account for 2 percent of global emissions, and are responsible for nearly 4 million premature deaths per year.[73,74,75]

CASE STUDY 4. KAISER PERMANENTE: SAVING LIVES, MONEY AND EMISSIONS

United States

Healthcare company Kaiser Permanente has long been an outlier within the US health system for setting – and achieving – aggressive targets for environmental sustainability that reduce emissions, improve health and save money. In 2020 the organization, which serves more than 12 million members, became the first health system of its size to achieve carbon-neutral certification – a landmark achievement in a country where hospitals are the second most energy-intensive buildings.

This has been achieved through several measures including:

- on-site renewable power generation (primarily solar) wherever this is cost neutral or better.
- efficiency measures such as intelligent lighting that have reduced energy intensity by 8 percent since 2014.
- virtual power purchase agreements to guarantee that the organization will buy green energy from new wind and solar farms over a 20-year period.
- building new facilities that are energy and water efficient.
- investment in carbon offset projects in the US and abroad, (which all carry health co-benefits) to offset the remaining emissions that cannot be eliminated (for example, some facilities still require natural gas heating).

This has all been achieved without increasing the cost of healthcare. Major projects have included appropriate financing – the landmark LEED Platinum San Diego Medical Center was financed with $1 billion of taxable and tax-exempt green bonds.

Having achieved carbon neutrality for emissions directly attributable to its facilities, Kaiser Permanente's attention is now turning to the even greater challenge of its 'Scope 3' footprint: emissions produced across its entire supply chain. This will be a very different task, requiring engagement and action at every level of the workforce to achieve change. However, with over 50 percent of patient interactions already virtual – even before COVID-19 – Kaiser Permanente is already leading by example in newer, greener models of care delivery.

CASE STUDY 5. HEALTHY BUILDINGS, HEALTHY PEOPLE

Qatar

It is projected that 68 percent of the world's population will live in cities by 2050, making urban environments a critical dimension to global challenges in health and environment.[76] In Qatar, this connection is even more apparent – with 98 percent of people's time spent inside. The Qatar Green Building Council (QGBC) has worked with the Ministry of Public Health on several win-win efforts to create immediate and long-term co-benefits. One of these is the adoption of national guidelines for healthy buildings, based on the international WELL building standard that includes specifications for light, water, air and the psychological wellbeing of the built environment.[77] One of the most recent initiatives is Qatar's participation in the Plant a Sensor campaign, co-ordinated by the World Green Building Council and other partners.[78] The QGBC is siting 20 indoor air-quality monitors in malls, schools, houses and health facilities across Qatar. These will link into a global network of more than 1,000 other sites across 30 countries, providing real-time intelligence on the performance of buildings to improve health and environmental sustainability.

Energy efficiency

Energy efficiency measures such as on-site renewable power, passive cooling and energy-efficient lighting can be some of the simplest ways for healthcare organizations to simultaneously reduce emissions and save money.[79] The example of Kaiser Permanente (Case study 4) demonstrates some of these, but health systems from Mexico, Brazil, India, Australia and Poland have all found ways to save money, strengthen resilience and reduce their energy-related emissions by up to 30 percent.[80]

Active transport

Inactivity is attributable for more than 5 million deaths a year – the fourth leading cause of non-communicable disease worldwide.[81] Sedentary forms of transport are one factor – especially passenger cars that are responsible for 8.7 percent of total greenhouse gas emissions.[82] Through better urban design and access, public transport infrastructure and realigned incentives, countries can make rapid shifts toward more active forms of transport such as walking and cycling. This also results in direct cost savings for health systems.[83]

Better diet

Food systems are responsible for up to a third of greenhouse gas emissions, with many of the most carbon-intensive sources also the same as those driving higher rates of diabetes, cardiovascular diseases and cancers worldwide, especially red meat.[84] Shifting the world toward a 'planetary health diet', which would include halving meat and sugar while doubling plant-based consumption, would save an estimated 11 million lives per year, while halving greenhouse gas emissions from the food system at the same time.[85] The future vision for leaders in climate, food and health systems is closely aligned, with increasing co-operation at the international level to support co-ordinated change.[86]

Safer births

Access to high-quality reproductive health services is an essential pillar of UHC – more than 200 million women want, but lack access to, modern contraceptives, resulting in 76 million unintended pregnancies each year.[87] Currently, 300,000 women die in pregnancy and childbirth each year. As well as helping to reduce this number, sexual health and reproductive services also have a significant impact on increasing birth spacing.[88] This lowers maternal and child mortality further, while also reducing overall family size, which has important climate impacts in terms of global emissions. (See the WISH 2015 Maternal and Newborn Health Policy Briefing for further information.)

See WISH 2015 Maternal and Newborn Health Policy Briefing, pages 9–10; 13–17.

CASE STUDY 6. A GREENER NATIONAL HEALTH SERVICE (NHS)

UK

The NHS is the largest single health system in the world. It is the UK's biggest employer, and one of the largest globally, with 1.5 million staff in 2019. It is estimated to contribute 4 percent of the country's carbon footprint, and has already reduced direct emissions by 62 percent compared to the international standard 1990 baseline. Still, there is much more to be done. In early 2020, the NHS launched the For a Greener NHS program, with the NHS Chief Executive, Sir Simon Stevens committing to "work with the world's leading experts to help set a practical, evidence-based and ambitious route map and date for the NHS to reach net zero." In October 2020, a multiyear plan for the NHS to become the world's first carbon net zero national health system was announced.

Based on the findings of *Delivering a 'Net Zero' National Health Service*, the NHS has adopted two targets to achieve net zero emissions:

- for the *NHS Carbon Footprint* (emissions under NHS direct control), to be net zero by 2040, with an ambition for an interim 80 percent reduction by 2028–2032.

- for the *NHS Carbon Footprint Plus*, (which includes the NHS's wider supply chain), to be net zero by 2045, with an ambition for an interim 80 percent reduction by 2036–2039.

The report highlights a number of early next steps and longer-term interventions required to meet these ambitious targets, including:

- greening the NHS fleet of vehicles.
- overseeing the building of 40 new net zero hospitals.
- working with policy teams on new ways to deliver care at or closer to home.
- reducing waste of consumable products.
- building sustainability into all staff training.

The report also highlights the links between the two public health crises that all systems are currently facing: COVID-19 and climate change.

For more information on a Net Zero NHS as it progresses, visit the Greener NHS website: www.england.nhs.uk/greenernhs.

Sources: NHS England 1 October 2020;[89] and NHS England 20 January 2020[90]

Greener spaces

Green spaces are the most powerful technology available for directly limiting climate change by taking carbon dioxide out of the atmosphere. When freely accessible, they also have powerful effects on human health – especially in cities where they offer protection from heatwaves, as well as significant improvements in air quality, mental health and even people's perceptions of health overall.[91] Green spaces are especially useful in healthcare settings, where gardens have been found to improve outcomes for patients in healthcare facilities, as well as useful forms of social prescribing.[92]

Healthcare's contribution as an innovator and influencer

Most of these co-benefits require health leaders to work with other sectors – forming alliances that will increase their influence and ability to act at scale. Previously health leaders have, for the most part, not been the driving force in such partnerships, perhaps because they are unsure of what their contribution to environmental issues should be, beyond words of encouragement. Yet there are compelling reasons why health leaders should take up a prominent and public-facing role in the climate crisis at local, national and international levels.

First, health professionals occupy a privileged position as authentic, authoritative and accountable voices: in one large national survey of trustworthiness of a wide range of professions, nurses, doctors and dentists were the top three trusted professionals.[93] COVID-19 will have extended this status even further in most countries, creating a unique leadership opportunity for the health sector over the next few years. This trust extends to information about climate change, where US citizens reported that their local primary care doctor carried the greatest weight on these issues, followed by national and local health agencies.[94]

Second, healthcare is the most powerful gateway for other sectors to break through to governments and the public. Framing the threats and opportunities of climate change in terms of human health has been shown to be one of the most effective ways of motivating people to act.[95] This impact is far greater than talking about climate change as a threat to national security or the natural world more generally.[96] This means that health leaders should be at the center of cross-sector partnerships to influence and build popular consensus for change. This is further helped by many more sectors now understanding their own role in protecting health following the COVID-19 pandemic.

Third, health organizations have tremendous market power to drive change directly. Public healthcare agencies control some $4.7 trillion of spending per year, and private spending accounts for another $3.1 trillion on top of that.[97] This constitutes around 10 percent of global GDP – a level of purchasing power few other industries can match. As an employer too, the healthcare industry employs some 70 million health workers and more than 100 million other staff – giving it huge leverage over the lives of a substantial share of humanity.[98] The UK's National Health Service (NHS) (see Case study 6) is one example of a health system attempting to use its full market power to lead the country's climate response.

SECTION 4. WHAT HEALTH LEADERS MUST DO

Health leaders have the means, the motive and the mission to protect people from the worst impacts of climate change, as well as reducing the threat at source. By doing so, they can help to create health-promoting, low-carbon economies that would not have been possible through a healthcare lens alone.

Yet, blending the complex health agenda with the equally complex environmental one can be overwhelming, resulting in inaction. To cut through this, the authors consulted a broad advisory group of experts and leaders across the environment, health and healthcare fields to arrive at a short-list of high-impact, practical and memorable actions that health leaders should prioritize. The resulting 'index card' lists 10 actions that were selected based on four key criteria – those that would most effectively:

1. reduce emissions.

2. achieve health and environmental co-benefits.

3. create multipliers beyond a single individual or institution.

4. be within the authority of senior healthcare executives to undertake.

The Index Card's 10 actions are not comprehensive. Rather, they offer a memorable list of the areas that health leaders can start with that will have the greatest impact, even if some will be more relevant to certain contexts than others (for example, low/high income, local/national). More detailed toolkits and resources to inform these 10 actions are listed at the end of this report.

INDEX CARD OF CLIMATE CHANGE ACTION FOR HEALTH LEADERS

Be the change:

1. Ensure that climate change resilience plans are in place, funded and acted on – including for multiple, simultaneous climate shocks.
2. Switch your facilities to the greenest possible systems of heating, lighting and electricity.
3. Be uncompromising about reducing waste and minimizing resource use across clinical operations and catering, and about the wider issues of how services are designed and delivered.
4. Require suppliers to: tell you about their environmental footprint and climate resilience; set a commitment to improving these; and report back on key milestones.
5. Publish a comprehensive baseline of your organization's environmental impact and commit to significant reductions every year.

Lead the change:

6. Mobilize your workforce to speak up and act on climate change, nature and equity – as individuals, within their organizations, and publicly.
7. Speak out about the adaptation measures needed across the health system and wider society to protect people's mental and physical health from climate threats.
8. Invest in developing innovations for climate-smart healthcare and divest from fossil fuels.
9. Build or join cross-sector coalitions that are working toward collective action on climate and nature, combining health's contribution with a diversity of other interests.
10. Highlight and act on the positive health impacts of improving air quality, as well as the negative impacts of fossil fuel power generation and subsidies.

1. **Ensure that climate change resilience plans are in place, funded and acted on – including for multiple, simultaneous climate shocks.**

   No health services or facilities can be considered 'safe and high quality' if they are not adapted for climate-related shocks and stress. Health systems are only as resilient as their weakest link, so every future decision needs to take account of local assessments of climate vulnerabilities. This can be as simple as where to site generators when a building's energy system is being updated, or as complex as engaging communities on new models of care.

2. **Switch your facilities to the greenest possible systems of heating, lighting and electricity.**

   Immediate energy use from healthcare facilities may only account for a third of healthcare's carbon footprint, but it is the area most immediately in scope to change, and save money at the same time. In addition to fitting more efficient lighting, intelligent heating and passive cooling technologies, health facilities should also seek to generate or buy their energy from fossil fuel-free sources where possible.

3. **Be uncompromising about reducing waste and minimizing resource use across clinical operations and catering, and about the wider issues of how services are designed and delivered.**

   Tackling waste is another quick solution, especially when seeking to engage staff: the quantities of plastic, chemical and food waste in health organizations are a frequent irritation to the workforce. Incremental improvements in waste, such as reducing overprescribing and single-use catering plastics, are often the most visible and easiest solutions. However, even greater financial and emissions savings can be achieved from investments in prevention that reduce the need for resource use in the first place.

4. **Require suppliers to: tell you about their environmental footprint and climate resilience; set a commitment to improving these; and report back on key milestones.**

   With 70 percent of healthcare's footprint coming from the supply chain, health organizations need to start using their buying power to influence the production of drugs, devices, food and other consumables. At a minimum, suppliers should be able to report their footprint,

commitment to emissions reduction, and resilience plans for climate shocks. Further steps might include adopting green purchasing principles, and rewarding climate-smart suppliers within the tender process.

5. Publish a comprehensive baseline of your organization's environmental impact and commit to significant reductions every year.

Many of the most successful climate-smart organizations have found a commitment to 'net zero' emissions by a certain date to be a powerful tool for galvanizing action. The starting point for this is a baseline analysis of the current environmental footprint – which is essential to prioritize action, set targets and effectively monitor the environmental impacts of future decisions.

6. Mobilize your workforce to speak up and act on climate change, nature and equity – as individuals, within their organizations, and publicly.

Professional associations have been at the forefront of calling for greater engagement between health and climate change, and can play a vital role in combatting misinformation.[99,100,101] However, frontline clinicians often do not feel that they have support from their employers to drive climate-related changes, let alone speak out publicly. This is a missed opportunity, as clinicians have the greatest public credibility,[102] the authority to change care pathways and to advise patients about lifestyle changes.[103] Unlocking the workforce's drive to tackle health and climate issues should be a top priority for health leaders. This starts with staff education – ideally specific to their field of practice and patients – as well as embedding environmental sustainability into existing quality improvement systems.[104]

7. Speak out about the adaptation measures needed across the health system and wider society to protect people's mental and physical health from climate threats.

Health leaders have a responsibility to advocate for adaptations that will be required to protect people and societies, and to highlight where this is not happening. One specific change that will enable this is to advocate the inclusion of health perspectives as part of environmental impact assessments – a necessary step in many major planning and public policy decisions. The reverse – including environmental input into health impact assessments – is equally useful at changing thinking across key commercial, political and social decisions.

8. Invest in developing innovations for climate-smart healthcare and divest from fossil fuels.

As more health organizations grasp the 'climate smart' imperative, there will be a growing market for innovations that can improve quality, save cost, and reduce emissions: healthcare's own green economic revolution. Investing in these innovations will be essential to meeting ambitions in line with global commitments to limit climate warming to 2 degrees Celsius. Organizations with significant reserves should also make sure that they invest in funds that do not include fossil fuel companies – as many health institutions are doing globally.[105,106]

9. Build or join cross-sector coalitions that are working toward collective action on climate and nature, combining health's contribution with a diversity of other interests.

Many of the most impactful actions to improve health and the climate require health leaders to extend their sphere of influence, and to benefit from the experience of other sectors. Collaborative efforts across the food, energy, and urban planning sectors require broad coalitions – some will already exist and some will need to be created. Health leaders need to redouble their efforts to ensure that they and their staff are working outside of their narrow professional spheres to benefit from a diversity of interests and opinions.

10. Highlight and act on the positive health impacts of improving air quality, as well as the negative impacts of fossil fuel power generation and subsidies.

There are a number of environmental causes that health leaders could lend public support to, but by far the most pressing from a health and climate perspective is the rapid phase-out of fossil fuels – especially coal. Campaigns to improve air quality offer a direct opportunity for health leaders to use their voice to advocate policies that will help the climate as well. Similarly, fossil fuel subsidies – still present to some degree in almost every country around the world – are an obvious perverse incentive, especially where the money might be more usefully redirected toward UHC.[107,108] The same is also true of progressive carbon pricing schemes being developed by a number of countries globally.[109]

SECTION 5: THE IMPORTANCE OF INTERNATIONAL CO-OPERATION ON CLIMATE AND HEALTH

International co-operation will be key to helping health leaders better model the changes they wish to see, as well as drive improvements elsewhere. To strengthen international co-operation, we have three final recommendations:

1. **To the health community:** We invite health system leaders keen to implement the Index Card of Climate Change Action for Health Leaders to join an ongoing sub-community of WISH, where they will be able to share lessons and ideas, and report back on their successes and challenges at the next conference in two years. Interested community members should express their support to wishclimateaction@qf.org.qa.

2. **To the climate community:** The upcoming UN Climate Change Conference of the Parties (COP26) in 2021 is one of the final opportunities to accelerate climate action in time to avert the worst impacts of climate change. We call on country representatives to give health and health leaders a central place in this process – reflecting the importance of the human health impacts of climate change, and the effectiveness of this lens at motivating action. At a minimum, this should mean including at least one health expert on each negotiating team, and the inclusion of health as a core theme in the summit.

3. **To governments:** We urge governments to put health and climate leaders at the heart of post-COVID recovery plans and stimulus packages, to ensure that the recovery from this pandemic accelerates the transition to health-promoting, low-carbon societies.

FURTHER RESOURCES AND TOOLKITS TO INFORM HEALTH AND CLIMATE ACTIONS

Healthcare Without Harm, *Global Green and Healthy Hospitals: A Comprehensive Environmental Health Agenda for Hospitals and Health Systems Around the World*. greenhospitals.net/wp-content/uploads/2011/10/Global-Green-and-Healthy-Hospitals-Agenda.pdf.

Pan American Health Organization, *Smart Hospitals Toolkit*. iris.paho.org/handle/10665.2/34977.

US Department of Health and Human Services, *Sustainable and Climate-Resilient Health Care Facilities Toolkit*. toolkit.climate.gov/tool/sustainable-and-climate-resilient-health-care-facilities-toolkit?page=2.

World Health Organization, *Operational Framework for Building Climate Resilient Health Systems*. www.who.int/globalchange/publications/building-climate-resilient-health-systems/en.

World Bank Group, *Climate-Smart Healthcare: Low-Carbon and Resilience Strategies for the Health Sector*. documents1.worldbank.org/curated/en/322251495434571418/pdf/113572-WP-PUBLIC-FINAL-WBG-Climate-smart-Healthcare-002.pdf.

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