



A sustainable future

By the numbers:

Impact to health

US\$8.1 trillion—The estimated annual global financial impact of health-related issues caused by poor air quality¹—around 7.7% of global GDP²

US\$820 billion—Annual cost of US medical bills stemming from air pollution, which leads to an estimated 107,000 premature deaths annually in the US³

Actions by systems

US\$52.5 million—Philanthropic grant to equip 25,000 health care facilities across 12 Indian states with solar power by 2026⁴

10,000—The number of electric vehicle charging points to be installed across Malaysia through a partnership between KPJ Healthcare, a private health care provider in Malaysia, and with green energy company Gentar⁵

261.5 tons—The reduction in carbon dioxide emissions over a six-month period because of energy-saving measures at an Egyptian cancer treatment center⁶

Each year, the scientific scenarios on Earth’s changing climate become clearer. If global warming intensifies beyond a 1.5°C threshold, dire consequences become more likely: devastating droughts and wildfires, rising food and water insecurity, and climate-linked migration, to name a few of the most dramatic effects.⁷

There is real momentum underway to counter many of these effects: US emissions have declined on average by 5% each year since their peak in 2007⁸, and emissions across the European Union (EU) have fallen 34% since 1990.⁹ Global agreements on methane and deforestation have progressed in recent years. In addition, countries at COP27, the 2022 United Nations Climate Change Conference, created a fund to aid global adaptation to climate impacts.

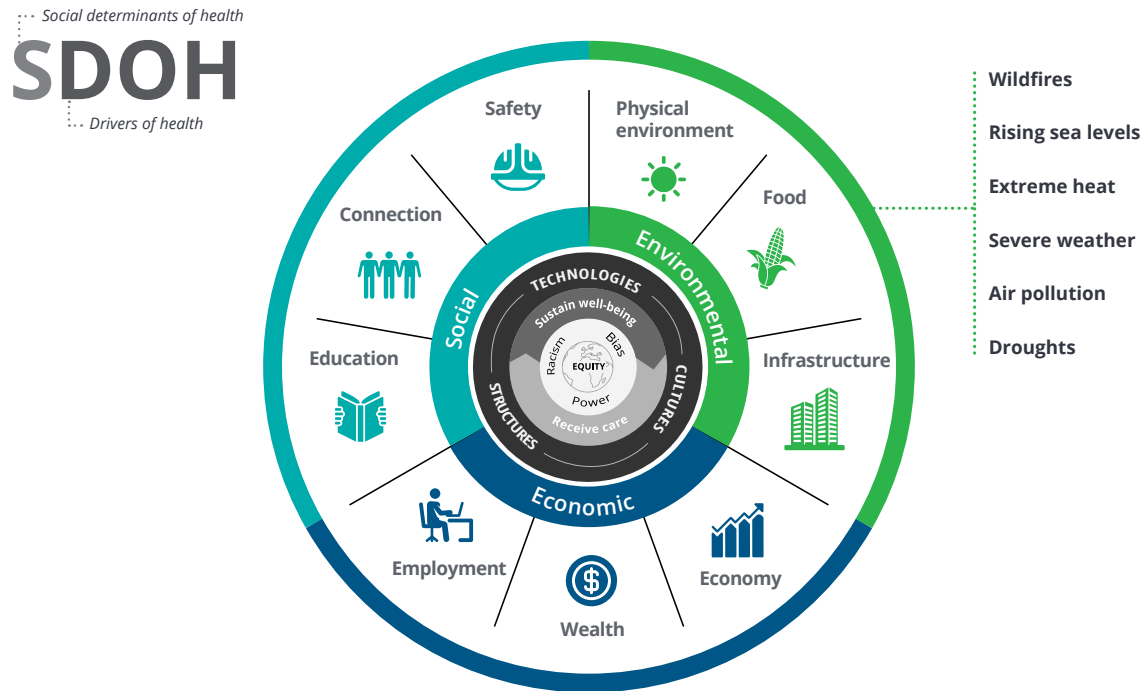
Still, these impacts are creating health inequities. Between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths

per year, with disproportionate effects on low-income areas with poor health infrastructure.¹⁰ The World Health Organization (WHO) estimates that 99% of the disease burden from climate change occurs in these places, 88% of which occurs in children under age 5. These bleak prospects have triggered alarms for governments and businesses to take action to build a more sustainable future.¹¹

The health care sector is susceptible to many of the effects of climate change—for the patients who receive care, as well as the organizations that deliver it. Climate change can exaggerate an array of problems like economic equity, gender equity, and migrant rights, and there’s a common thread in a recently conducted Deloitte US analysis linking these social issues to health care (Figure 1). Some estimates suggest that stronger climate action could eliminate more than 100 million premature deaths globally, strengthen health outcomes, and maintain a more habitable ecosystem.¹²

Figure 1: The physical environment is a threat multiplier for overall human health¹³

Climate change disproportionately affects the health and well-being of historically under-resourced communities



Source: Deloitte analysis.

In response to these challenges, health care systems around the globe are building more sustainable operations. Some are prioritizing energy efficiency within their clinical care systems. Others have accelerated their decarbonization efforts. There's a commitment to improving visibility into supply chains.

And other systems and care providers are improving the way they share data to eliminate waste and provide more sustainable, equitable care. This can include a multi-step process to help mitigate climate change:

- Reducing the sources of greenhouse gases
- Adapting to extreme conditions to lower an organization's vulnerability to future risks
- Transforming care delivery so it's more sustainable¹⁴

Delivering sustainable care in unpredictable environments

Though health care systems and providers treat many of the same ailments and conditions irrespective of geography, the environments in which they do their work can be significantly different. Low-lying island nations and coastal areas face the threat of rising oceans. There can be severe heat crises in regions unaccustomed to dangerously high temperatures. Geopolitical conflicts have disrupted supply chains and access to critical medical equipment and goods.

One of the ways hospitals are addressing acute energy insecurities that affect the delivery of care is by building resilience into their operations.

For instance, in Luxor, Egypt, the 150-bed Shefaa Al-Orman Oncology Hospital, a cancer treatment center, faced challenges from high energy consumption that was driving up operating costs and causing negative environmental impacts. The hospital took several steps to help increase energy efficiency. Staff used timers to schedule the heating, ventilation, and air conditioning systems, setting a standard temperature of 25°C (77°F). It also used sensors for external lighting and switched to energy efficient LED lights, reducing its energy consumption by 20% in a six-month period.¹⁵

In the US, one hospital has reacted to a string of natural disasters by investing in systems to boost its resilience. In 2001, historic flooding crippled the largest medical complex in the US. Water damaged the center's emergency generator, causing a complete power outage. The hospital staff invested in a new on-site, combined heat and power plant to eliminate dependence on the city's energy grid. The system was put to the test with hurricanes in 2005, 2008, and 2017. Despite citywide flooding from Hurricane Harvey in 2017, all of the system's hospitals and emergency rooms remained operational during the emergency.¹⁶

Decarbonization investments take shape

Keeping these systems running requires resources, including heating and cooling, lighting, water, and transport from the volume of traffic to and from hospitals—producing emissions across these operations. In fact, health care contributes nearly 5% of global greenhouse gas (GHG) emissions, with G20 countries emitting more than 75% of that total.¹⁷ A 2023 report by the independent Indian think tank Observer Research Foundation reports that some of the main contributors to GHG emissions in health care are the US (27%), China (17%), the EU (12%), Japan (5%), and Russia (4%). Brazil, India, South Korea, Canada, and Australia contribute about 2% each.¹⁸

The report equates the climate crisis with a public health crisis, asserting that the health care sector should decarbonize by reducing direct emissions produced by health care facilities. Among the recommendations is guidance that countries include health and health care decarbonization plans in their national and sub-national climate policies as stipulated in the 2015 Paris Agreement. As of 2023, only 10% of these national plans refer to the health impacts of climate change.¹⁹

Some plans, like the UK's National Health Service (NHS) Carbon Footprint, take a two-part approach: For emissions the system controls directly, the UK pledges to be net-zero by 2040, while aiming to reach an 80% reduction between the years 2028 and 2032.

For emissions NHS can influence outside of its system, the goal is becoming net-zero by 2045 and reach an 80% reduction between 2036 and 2039.²⁰

Investments at the national and operator level are already addressing the matter. In 2023, the University Hospital Southampton NHS Foundation Trust (UHS), an acute hospital trust in the UK, received a US\$31.4 million grant from the Public Sector Decarbonization Scheme; the trust will install an energy-efficient heating system to meet its pledge to become Net Carbon Zero by 2045. The new system replaces 20-year-old infrastructure and provides a more comfortable environment for patients and staff, hospital leaders say.²¹

In the US, a health care system is addressing decarbonization by building its own microgrid. In 2023, Valley Children's Healthcare, a US pediatric provider, launched a new energy resilience and environmental strategy. The goal is a 50% reduction in greenhouse gas emissions by 2030, net-zero carbon emissions by 2050, and the establishment of the largest pediatric health care-based renewable energy microgrid in the country. Valley Children's anticipates that the system will be online and operational by 2025, reducing reliance on the power grid, and ensuring the complex remains operational even during power outages.²² Changes are coming in the political arena, too, as the US state of California will enact new legislation from 2026 to require big corporations to disclose their carbon footprints and climate-related financial risks.²³

And in India, Ambica Constructions and Contractors and Lifeline Hospitals Group in 2023 announced plans to invest US\$1.4 billion to develop India's first 500-bed, completely carbon-neutral hospital.²⁴

Encouraging sustainable supply chains

Another area of focus for health care sector leaders is creating supply chains that flex with environmental, social, economic, and technological changes. There are several barriers to adopting sustainable practices throughout supply chains, however. Procurement

processes in a global context are fragmented. Sustainability regulations vary from region to region. In the absence of a comprehensive supplier engagement program, standardization, or clear mandates, breaking down the barriers between purchasing and clinical care can be challenging.

The framework to categorize GHG emissions include Scope 1, which comprises facility-level emissions from service delivery; Scope 2, which includes emissions produced while using the energy purchased from external grids; and Scope 3, which covers emissions from the supply chain, including the manufacture, supply, use and disposal of health care goods and services.²⁵

In the UK, the NHS is addressing these challenges by launching a comprehensive supplier engagement program. This program sets specific targets for supply chain partners and emphasizes decarbonization across multiple scopes—working with suppliers of consumables and medical devices to reduce excessive packaging in the supply chain.²⁶

A broader, global effort with climate and sustainability targets for suppliers to reduce emissions across the value chain launched in 2023 through the Sustainable Markets Initiative Health Systems Task Force. This public-private strategic partnership of CEOs and leaders from global health care organizations, life sciences companies and institutions supports United Nations efforts to strengthen climate resilience and lower the emissions of health systems.

The following are among the targets for the private sector:

- Switch from 80% to 100% renewable power for their own operations by 2030
- Transition car fleets to zero-emission vehicles by 2030
- Jointly explore green heat solutions by 2025 to boost adoption of effective and scalable technologies²⁷

Cutting down on waste across the value chain

A closely linked issue to supply chains is how health care systems are managing waste. Consider that roughly 15% of the total health care waste produced is hazardous and can be infectious, toxic or radioactive; if not treated properly it can pose a risk to human health and the environment.²⁸ And the WHO calculates that the average amount of hazardous waste produced per bed per day is 0.5 kg in high-income countries, and 0.2 kg in low-income countries.²⁹ But less than one in three health care facilities globally possess the basic health care waste management services.³⁰

Not all of the waste is physical. One anesthetic gas, desflurane, has 20 times the environmental impact of other less harmful greenhouse gases. Per bottle it has the same global warming effect as burning 440 kg of coal. One UK hospital started a campaign with color-coded cards to urge staff to use alternative options when possible, resulting in a reduction of 30,000 kg of carbon dioxide per month.³¹

Elsewhere, clinicians are studying ways to use all items in procedure packs instead of discarding unused ones. There's opportunity to include discussions of waste in the value chain by focusing on high-value materials like electronics.

Cutting back on the massive amounts of food waste and reducing food insecurity are dual issues that one California health care system took on. Food insecurity affects 1 in 5 Californians, with greater levels of hunger affecting Black and Hispanic families. In 2020, Sutter Health began a food donation pilot program, collaborating with a logistics company to donate food from 10 hospitals to 40 nonprofit organizations within five miles of each facility, ultimately diverting food waste from landfills. The program also provided 54,000 meals to community-based organizations.³²

Here are some other ways health care organizations can help reduce waste and emissions:

- **Supply chain optimization:** Incorporate local, sustainable, and circular principles in procurement
- **Clinical innovation:** Support preventative care, and introduce new processes that help limit the volume and toxicity of waste
- **Low-carbon medicines:** Substitute high-emission products with more climate friendly alternatives, and incentivize the production of climate-smart medication
- **Transportation efficiency:** Limit transportation-related emissions via zero-emission fleets, public transport, and hybrid health care strategies³³

Measuring sustainable outcomes

Measuring environmental impact and being able to compare and learn from peers on how to minimize impact is another way the health care sector can build more sustainable systems. For instance, in 2023 the Geneva Sustainability Centre of the International Hospital Federation, in collaboration with Deloitte Switzerland, launched the [Sustainability Accelerator Tool \(SAT\)](#). The cloud-based platform measures a hospital's performance against core indicators, and compares those to other health care institutions worldwide. The dashboard includes benchmarks that are specific to the health care sector, providing a global reference alongside an organization's individual progress on sustainability. A US hospital association signed an agreement with the Geneva Sustainability Centre to promote the SAT to its network of nearly 5,000 hospitals, health systems and health care organizations in the US—helping equip hospital leaders with information to encourage the sector's transition to sustainability.³⁴

A commitment to information sharing can also influence health outcomes for populations disproportionately affected by social determinants of health. In the US, for instance, the Association for Professionals in Infection Control and Epidemiology (APIC) established the APIC Health Equity Fund to underwrite the cost of infection prevention tools and resources for underserved communities.³⁵

The ultimate goal is reducing financial strain and increasing access to quality care, thereby encouraging a sustainable future for patients of all backgrounds.

Questions for providers

- Have you thought about the ways environmental data is impacting health?
- Have you looked at the ways social vulnerability and environmental data can affect health outcomes?
- How are you measuring your environmental footprint?
- What's your capacity for adaptation and resilience in the event of an emergency? How will it affect your facilities, staffing ratios, or abilities to provide care?
- How well are you sharing data with your peers?



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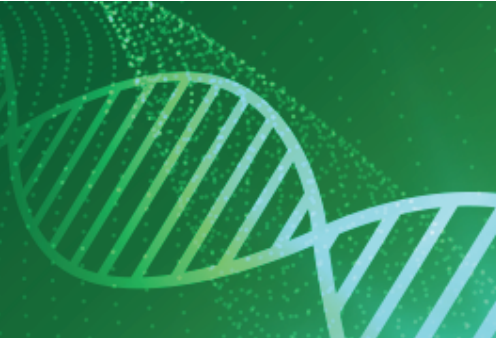
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[Why climate resilience is key to building the health care organization of the future](#)

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