



Environmental sustainability of health systems: time to act

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The health-care sector faces a great climate change paradox: health-care facilities and health-care givers are responsible for providing care to those who face harm and illness caused by climate change, but health systems also bear responsibility for the extensive environmental waste and contamination that contribute to these threats.¹ Health care contributes nearly 5% of greenhouse gas emissions globally; and if the sector was a country, it would be the fifth largest polluter in the world.² As the Pan-European Commission on Health and Sustainable Development and others have underlined, the world is at a crucial moment that requires the operationalisation of One Health and the re-orientation of health-care practices, the determinants of health, and collaboration and coordination across sectors.³⁻⁵ A first step in reducing countries' carbon footprints is to work with those who are tackling climate change and biodiversity loss issues to foster environmental sustainability within health systems and the way they function.^{3,6}

Many countries have made climate change commitments, including specific pledges to make health care increasingly environmentally sustainable, but the time to tackle what WHO and others have termed the biggest threat to global health is now.⁷ Some environmentally sustainable efforts in the health sector are under way (panel) but, considering the scope of the issue, further action is needed. England's National Health Service (NHS) contributed

4% of the country's total carbon footprint in 2020,⁸ in Australia health care represented 7% of national carbon emissions in 2014–15 according to one study,¹⁴ and, as of 2021, the health-care sector in the USA accounted for 8.5% of national emissions.¹⁵ However, in many countries, calculations for total greenhouse gas emissions across the health-care sector and for projected future carbon emissions are not available. If countries are serious about reducing such emissions and creating sustainable health systems, establishing their baseline carbon footprints is a crucial first step, so that they can identify their largest sources of emissions, set evidence-based targets with mechanisms for measuring progress, and introduce policies that support their emissions reduction goals.¹⁶

In setting these targets, the differential effects of net-zero goals compared with absolute emissions reduction goals should be considered. The former allows countries to continue emitting high amounts of greenhouse gases as long as they purchase enough carbon offsets, whereas the latter simply requires reductions without any offsets.¹⁰ Furthermore, countries should consider how carbon reduction practices already in use around the world could fit into their own contexts. For example, hospital emissions are 2.5 times higher than for commercial buildings.¹⁷ Hospitals can act to have a major effect on carbon reductions by switching to renewable energy sources and using energy-efficient medical equipment.¹⁷ When

Panel: Selected examples of environmentally sustainable commitments and efforts in health-care systems

- In 2022, the National Health Service England's net zero carbon emissions target was incorporated into legislation, which was the first time this had happened for a health system⁸
- Sweden's efforts to install in its medical facilities systems to destroy nitrous oxide have contributed in part to more than a 50% reduction in climate effect from medical gases in the country since 2009⁹
- In the USA, more than 100 health-care organisations have signed the White House–US Department of Health and Human Services Health Sector Climate Pledge¹⁰ to reduce organisational emissions by 50% by 2030, and to achieve net-zero commitments by 2050
- Spain and Belgium have committed to make their health systems net-zero by 2050¹¹
- Switzerland's largest private hospital network (Hirslanden) has set goals to become carbon neutral and to avoid sending any waste to landfill by 2030¹¹
- In 2021, the Victoria Department of Health in Australia published its Environmental Sustainability Strategy—Strategic Implementation Plan, which outlines governance arrangements, reporting requirements, and actions to support progress towards its goals in 2021–22¹²
- In 2015, the Western Cape Government Health Department in South Africa became one of the first 20 health-care institutions in the world to pledge to meet the Health Care Climate Challenge, and committed to reduce its carbon footprint from hospital energy consumption by 30% (compared with 2005 levels) by 2030¹³

it comes to countries implementing environmentally sustainable efforts in health systems, some immediate actions include using telemedicine for non-emergency appointments, reducing energy consumption in settings where it does not affect clinical care (eg, in elective-surgery operating rooms during evenings and weekends), implementing preferential procurement practices that reward companies that are actively reducing emissions in their supply chains, and shifting to greater use of products that do less harm to the environment (eg, replacing old lighting with LED bulbs and ending use of desflurane in favour of carbon-friendlier alternatives).¹⁰

All these changes will require financial and political commitments at every level, but experts suggest these will pay off in the long run. For example, estimates suggest that a non-recurrent investment of £492 million to deliver 100% LED lighting in the NHS would pay itself back in less than 4 years and provide over £3 billion in net savings in the subsequent 30 years.⁸ In the USA, estimates suggest that adjusting heating, ventilation, and air conditioning settings to reduce air turnover when operating rooms are not in use could save US\$7000 per room per year.¹⁸ Since 2015, Rochester Regional Health in New York, NY, USA, claims that it has saved over \$2.4 million annually from renewable energy, energy efficiency, and carbon reduction initiatives.¹⁹

Building on existing efforts and working with relevant organisations in Europe^{1,6,8,20} (eg, Health Care Without Harm), the WHO Regional Office for Europe is making environmentally sustainable health systems one of its major priorities. WHO will hold its Seventh Ministerial Conference on Environment and Health in Budapest, Hungary on July 5–7, 2023.²¹ Discussions will focus on the strategic concrete actions, measures, and commitments that health systems can take to reduce their carbon emissions and to adapt to and improve resiliency against climate change, biodiversity loss, and environmental pollution. The conference will provide a platform for cross-country exchange of good practices, knowledge, experiences, and tools, and the launch of new partnerships, which will address environmental and health concerns. Crucially, the conference will culminate in the adoption of a declaration that includes concrete commitments to action. After all, as health practitioners, policy makers, and advocates, we must act urgently

with the recognition that the environmental impacts of health systems and structures threaten exactly what we strive to achieve for patients—health and wellbeing.

HK, NAM, and NB are members of the organising committee of the WHO Seventh Ministerial Conference on Environment and Health. All other authors declare no competing interests.

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Child marriage could be history by 2030, or last 300 more years



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By age 18 years, Lalitbai was a married mother of three children. She became a child bride when she was 13 years old. At age 32 years, Lalitbai was a widow and cast out of her extended family. With no money or education, she worked tirelessly as a day labourer, eventually starting her own small bakery. She now speaks openly, with neighbours and in local gatherings, about stopping child marriage. Lalitbai lives in India, the country with the largest number of child brides worldwide.¹ Yet India is also making progress in reducing child marriage. According to UNICEF's *Is an End to Child Marriage within Reach? Latest Trends and Future Prospects, 2023 Update*, released on May 3, 2023, since 2012, the percentage of young women aged 20–24 years who were married as children worldwide has fallen from 23% to 19%, and a substantial portion of this progress is driven by reductions in India.¹ In the past decade the prevalence of child marriage in this country has declined from 38% to 23%.²

UNICEF's report draws on nationally representative data from more than 100 countries, primarily collected through household surveys, including the Multiple Indicator Cluster Surveys and the Demographic and Health Surveys, and provides current estimates of child marriage globally together with projections of possible future scenarios. The report shows that other populous countries are also propelling global reductions in child marriage, including Bangladesh and Ethiopia. Some countries with traditionally lower prevalence of child marriage, such as the Maldives and Rwanda, are heading towards elimination. As a result of such trends, 68 million child marriages have been averted globally in the past 25 years.¹

But progress is far from universal. UNICEF's analysis reveals only slight declines in child marriage in west

and central Africa, which is the region with the highest prevalence of child marriage.¹ There has been no change in Latin American and the Caribbean, which, if the current trajectory continues, would have the second highest prevalence of child marriage worldwide by 2030.¹ After steady progress between 1997 and 2012, the Middle East, north Africa, eastern Europe, and central Asia regions have all seen stagnation in reducing child marriage in the past decade.¹

The Sustainable Development Goals (SDGs) call for the elimination of child marriage by 2030. Yet as UNICEF's analysis highlights, current reductions in child marriage are too slow, pushing achievement of that SDG target off by at least 300 years.¹ Moreover, the demographics going forward are not favourable. Countries in sub-Saharan Africa with the highest projected population growth have the highest levels of child marriage, meaning the number of marriages is expected to increase there.

UNICEF's report also warns that gains in reducing child marriage can be quickly lost, especially in the context of the COVID-19 pandemic, conflicts, and climate-related crisis. The socioeconomic impacts of the COVID-19 pandemic cut the estimated global number of averted cases of child marriage since 2020 by one quarter.¹ In general, each tenfold increase in conflict-related deaths means an estimated 7% increase in the prevalence of child marriage.¹ Similarly, a 10% change in rainfall due to climate change correlates with an estimated 1% increase in child marriage.¹

Concerningly, declining child marriage prevalence is concentrated among girls from wealthier households. Girls from the richest quintile are less likely to become child brides and are the first to benefit from progress