

The 2025 Global Report of the *Lancet* Countdown on Health and Climate Change: Climate change action offers a lifeline

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Executive summary

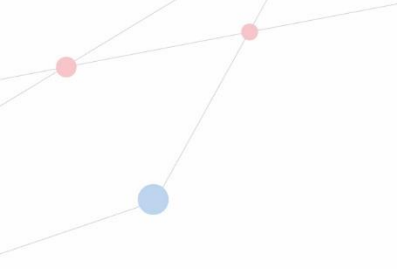
Driven by human-caused greenhouse gas (GHG) emissions, climate change is increasingly claiming lives and harming people's health worldwide. Mean annual temperatures exceeded 1.5°C above those of pre-industrial times for the first time in 2024. Despite ever more urgent calls to tackle climate change, emissions rose to record levels that same year. Climate change is increasingly destabilising the planetary systems and environmental conditions on which human life depends.

Authored by 128 multidisciplinary experts worldwide, the 2025 report of the *Lancet* Countdown on health and climate change is the 9th – and most comprehensive – assessment of the links between climate change and health. Its data reveals that, as the health risks and impacts of climate change break concerning new records, progress is being reversed across key areas, further threatening health and survival. However, the evidence in this report also informs important opportunities to accelerate action, and prevent the most catastrophic impacts of climate change (Panel1).

The growing human costs of delayed climate change actions

The health threats of climate change have reached unprecedented levels. Of the 20 indicators tracking the health risks and impacts of climate change in this report, 13 have set concerning new records in the latest year for which indicator data is available.

On average, 16 (84%) of the 19 life-threatening heatwave days that people were exposed to annually in 2020-2024 would have not occurred without climate change. Infants younger than 1 year and adults aged 65 years and older (the most vulnerable age groups were exposed to a record-high number of heatwave days in 2024, with infants under 1 year being exposed to 389% more heatwave days each year on average, and adults aged 65 and older exposed to 304% more heatwave days each on average, compared with the average exposure in 1986-2005 (indicator 1.1.1). The higher temperatures and increasing size of vulnerable populations led to a 63% increase in heat-related deaths since the 1990s, reaching an estimated 546,000 yearly deaths on average in 2012-2021 (indicator 1.1.5). The impacts of heat exposure on the ability to work or exercise outdoors, and sleep quality, have also reached concerning levels, affecting physical



and mental health (indicators 1.1.2, 1.1.3 and 1.1.4).

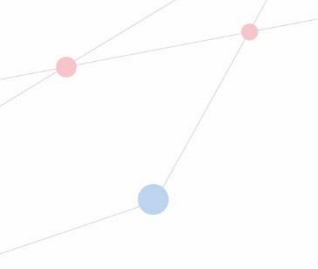
The incidence of extreme precipitation days (which affect health and can trigger flash floods and landslides), increased in 64% of the world's land surface between 1961-90 and 2015-24 (indicator 1.2.3). Meanwhile, a record-breaking 61% of the global land area was affected by extreme drought in 2024, which is 299% above the 1950s average, further threatening food and water security, sanitation, and causing downstream economic losses (indicator 1.2.2). These extremes of heat, precipitation and droughts can affect crop productivity, disrupt supply chains, hamper the work of agricultural workers, and affect income, further threatening food security. Indeed, the higher number of heatwave days and drought months in 2023 compared to 1981–2010 were associated with 123.7 million more people experiencing moderate or severe food insecurity in 124 countries analysed (indicator 1.4). Additionally, the hotter and drier weather is increasing the risk of wildfires, and 2024 had a record-high 154,000 deaths from wildfire smoke-derived small particulate matter air pollution (PM_{2.5}) (indicator 1.2.1).

The changing climatic conditions are also affecting the risk of transmission of deadly infectious diseases. The average climate-defined transmission potential of dengue by *Aedes albopictus* and *A. aegypti* increased by 48.5% and 11.6%, respectively, from 1951-60 to 2015-24, at least partially contributing to the 7.6 million dengue cases reported globally in early 2024 (indicator 1.3.1). The changing climate pushed 14 more countries to exhibit a 50% or higher probability of at least one domestically-transmitted case of leishmaniasis in 2015-2024 than in the 1950s (indicator 1.3.4); an additional 364 million people were at risk of tick-borne diseases transmitted by *Rhipicephalus sanguineus* and *Hyalomma* spp (including Rocky Mountain Spotted Fever and Crimean-Congo Hemorrhagic Fever) in 2015-2024 compared to the 1950s (indicator 1.3.5).

The multiple health impacts of climate change are increasingly straining the economy: by reducing labour productivity, increasing worker absenteeism, and burdening health systems, which in turn, affects the socioeconomic conditions that support health and wellbeing. Heat exposure resulted in a record-high 639 billion potential work hours being lost in 2024, 98% above the 1990–99 average. The hours lost in 2024 resulted in potential losses worth US\$ 1.09 trillion; almost 1% of Global World Product (GWP; indicators 1.1.3 and 4.1.3). Additionally, weather-related extreme events in 2024 caused US\$ 304 billion in global economic losses – a 58.9% increase from the 2010-14 annual average. Growing in both scale and unpredictability, these losses are increasingly straining health systems, which are increasingly incapable of absorbing climate-related damages. Insurance coverage of growing extreme weather event-related losses fell from 67% in 2010-14 to 54% in 2020-224. As a result, losses increasingly falling on public systems and on individuals, affecting health and socioeconomic wellbeing, and reducing people's capacity to cope and recover from climate change-related impacts, and further exacerbating their vulnerability to climate change (indicator 4.1.1).

Indicators in this report reveal growing health threats of climate change across every dimension monitored. Yet, when assessed in isolation, these indicators can obscure the compounding and synergistic effects of these multiple health impacts occurring simultaneously, which may trigger amplified and cascading harms. These impacts can affect the social, economic, and environmental pillars on which people's health, livelihoods and survival depend, and further exacerbate the risk of social unrest and conflict.

Delays in unrolling urgently needed adaptation strategies have left people poorly protected in the face of growing hazards, exacerbating the health harms of climate change. Scarce financial support for adaptation remains a key barrier, and is still grossly insufficient to cover disclosed financial needs (indicator 4.3.4). A political shift towards reduced foreign aid support from some



of the world's wealthiest countries (and those amongst the most responsible for current climate change), further restricts support for climate change action, leaving all populations increasingly unprotected.

With adaptation measures to date insufficient to protect people from the current level of heating, accelerated efforts are urgently required to build resilience, minimise impacts, and save lives. However, every unit of greenhouse gases emitted amplifies the risks, and exacerbates the economic costs and challenges of adaptation. Simultaneous and effective mitigation is therefore essential to keep adaptation feasible, and to ensure that the world's populations can still be protected from the climatic changes that have now become unavoidable.

The price of backsliding: putting people in harm's way

Despite decades of scientific warnings, the world is currently heading towards a potentially catastrophic 2.7°C of heating by the end of the century –if not more – and emissions keep rising.

Emissions generated in the production and use of energy increased 1.6% in 2023, to unprecedented levels; global agricultural greenhouse gas emissions reached an all-time high in the latest year of data (2022); and global tree cover loss grew by 24% to over 28 million hectares in 2023, limiting the capacity to reduce atmospheric greenhouse gas concentrations (indicators 3.1.1, 3.3.1 and 3.4).

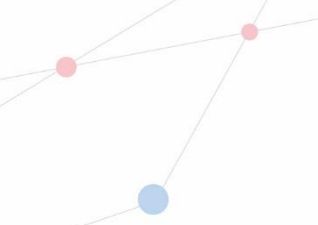
Paradoxically, as the need for decisive health-protective action grows, some world leaders are disregarding the growing body of scientific evidence on health and climate change, often in favour of short-sighted economic and political interests. The prioritisation of climate change action in political agendas is therefore waning: mentions of health and climate change by governments in their annual UN General Debate statements declined from 62% in 2021 to 30% in 2024 (indicator 5.4.1). This engagement remains mostly driven by countries that are least

responsible for, but most affected by, climate change, whereas engagement is falling in some of the world's greatest greenhouse gas emitters. The new US Administration withdrew the country from the 2015 Paris Agreement, and dismantled world-leading research in the field, as well as key health, climate and environmental agencies. Some countries (eg, Argentina and Hungary) have taken similar obstructive stances, while others dropped crucial climate commitments. The USA's withdrawal from WHO compounds climate threats, exacerbating health risks globally.

With reduced pressure from powerful political leaders, fossil fuel giants (including Shell, BP, ExxonMobil, and Chevron) have paused, delayed, or retracted their climate commitments, increasingly pushing the world towards a dangerous future. As of March 2025, the 100 largest oil and gas companies had production strategies that put them on track to exceed their share of production consistent with 1.5°C of heating by 189% in 2040, up from 183% in March 2024 (indicator 4.2.2). Private banks supported this expansion, as their lending to fossil fuel sector activities surged 29% to US\$ 611 billion in 2024, exceeding their green sector lending by 15% (indicator 4.3.3). These fossil fuel investments threaten not only public health but also national economies. The value of coal power sector assets at risk of being stranded in 2030 rose by 44% from 2023 to 2024, reaching \$ 22.4 billion (indicator 4.2.3). Meanwhile, delayed action and backtracked commitments have further reduced most countries' preparedness for the transition to zero-carbon, health-supporting socioeconomic systems (indicator 4.2.4).

Missed opportunities paid for in millions of lives

Previous *Lancet* Countdown reports have highlighted the health opportunities of a just and health-centered transition in line with the Paris Agreement. However, these opportunities remain largely untapped, resulting in millions of avoidable deaths yearly.



Increasing access to affordable, off-grid, renewable electricity is essential to tackle the major source of greenhouse gas emissions and reduce climate risks. With adequate international cooperation, technology transfer, knowledge sharing, and capacity building – alongside regulation to prevent health harms from raw material extraction and waste disposal – renewable energy can also drive development, support the eradication of energy poverty, and reduce environmental health risks. Yet, this potential remains mostly unrealised. Globally, 745 million people still lack access to electricity; around 1 billion are served by health-care facilities that lack reliable power supplies, and 88% of households in countries with Low Human Development Index (HDI) still primarily use polluting and unreliable fuels to meet their energy needs (indicator 3.1.2). With structural barriers and global disparities in technology development and access, clean energy access remains deeply unequal: Low HDI countries relied on renewables for just 3.5% of energy in 2022, compared with 12% in High HDI countries and 13.3% in Very High HDI countries (indicator 3.1.1). Moreover, the air pollution resulting from the household use of dirty fuels and technologies across 65 countries resulted in 2.3 million deaths in 2022 (indicator 3.2.2), including some of the 2.52 million deaths still attributable to ambient air pollution from the burning of fossil fuels globally in 2022 (indicator 3.2.1) – deaths that could largely be avoided by transitioning to clean, renewable energy.

The failure to transition away from fossil fuels has also come at a major financial cost. In response to the fossil fuel price spike that followed Russia's invasion of Ukraine, most countries – still heavily reliant on this source of energy – resorted to subsidies to keep energy affordable and prevent a spike in energy poverty. As a result, 73 (84%) of the 87 countries reviewed (accounting for 93% of global greenhouse gas emissions) provided net explicit fossil fuel subsidies in 2023, allocating a net total \$956 billion to this purpose – the second-highest value on record, only below the \$1.4 trillion allocated the year before. Of these countries, 17% (n=15) allocated more

funds to net fossil fuel subsidies than to national health budgets, reflecting the opportunity cost of the fossil fuel dependence (indicator 4.3.2). The fiscal pressures from the local reliance on fossil fuel subsidies can be eliminated by transitioning away from fossil fuels, making funds available to support activities that benefit – rather than harm – human health.

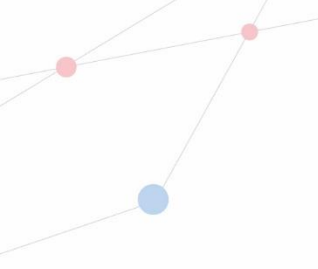
Turning to the food sector, the potential health benefits of more sustainable, climate-friendly diets also remain largely undelivered: mortality related to high-carbon, unhealthy diets increased from 148 per 100,000 people to 150 per 100,000 people between 2021 and 2022, resulting in 11.8 million largely preventable deaths (indicators 3.3.1 and 3.3.2).

These undelivered opportunities highlight the potential of health-centered climate change action in helping tackle some of the major issues facing populations and governments worldwide, from health burdens to fiscal pressures. Countries that commit to prioritising this transition will stand to gain the most from its health and economic benefits and can still lead the way to a prosperous future for present and future generations, both within and beyond their country borders.

Growing momentum

Amidst growing health harms, avoiding the most catastrophic impacts of climate change requires immediate and bold climate change action across every economic sector and social actor. Despite increasingly challenging geopolitical landscapes, some positive signs showcase growing momentum.

The growth of the clean energy sector is underway. The share of electricity generated by modern renewables is growing rapidly, reaching a record-high 12.1% in 2022 (indicator 3.1.1). The shift away from coal, particularly in high and very high HDI countries, resulted in a 5.8% reduction in deaths attributable to ambient PM_{2.5} from fossil fuel combustion between 2010 and 2022, avoiding 160,000 deaths annually. Countries leading the clean energy transition



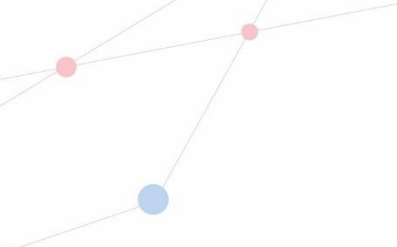
have also had substantial economic benefits. In 2023, the clean energy sector accounted for 10% of global GDP growth, with clean energy growth accounting for 6% of GDP growth in the USA, almost 5% of GDP growth in India, and over 30% of GDP growth in the EU. As the UK became the first major economy to halve global emissions from 1990 levels, its green economy grew three times faster than the broader economy. In China, the world's largest single greenhouse gas emitter, renewable energy contributed to a record 10% of its GDP in 2024, and CO₂ emissions fell for the first time, while delivering cleaner air and improving health outcomes. Globally, direct and indirect employment in the renewable energy sector increased by 18.3% in 2023, reaching 16.2 million employees globally (indicator 4.2.1), providing healthier and more sustainable job opportunities than the fossil fuel sector. Meanwhile, direct fossil fuel employment fell 0.7% to 9.06 million jobs (indicator 4.2.1), even as fossil fuel production expanded. Additionally, tree cover loss in Brazil decreased by 15% from 2022 to 2023, and the local loss of primary forest fell by 36%, protecting a region that holds the world's largest carbon sink (indicator 3.4).

Despite waning engagement with climate change and health by some world leaders, the growing engagement of other actors enables important avenues for change. Local governments are emerging as strongholds for change, and a growing number of cities are prioritising the protection of health through climate change action. Of the cities reporting to the CDP (formerly known as the Carbon Disclosure Project) in 2024 – which runs the world's biggest system of disclosure of environmental actions – 97% declared having completed, or intending to complete, climate change risk assessments (indicator 2.1.3). Additionally, although mentions of health and climate change within companies' reports to the Global Compact fell in 2024 (indicator 5.5), there are signals of growing private sector support to progress climate change action. Importantly, support for climate change and health finance is growing too, and the launch of the Development Banks' Joint

Roadmap for Climate-Health Finance and Action in June 2024, offers a framework to advance the provision of critically needed finance to advance the protection of health from climate change hazards.

Beyond the support from key organisations, the proactive engagement of individuals with climate change and health, an essential driver of community-led actions, is also growing (indicator 5.2). Individuals and civil society organisations are increasingly improving the protection of the right to health, including by resorting to litigation to advance the protection of the right to health and to a healthy environment, and to keep governments and corporations accountable. In June, 2025, the International Court of Justice's Advisory Opinion on the Obligations of States in respect of Climate Change concluded that states have legal obligations to limit greenhouse gas emissions, that they can incur legal responsibilities and can be required to pay reparations if they fail to meet these obligations. This Advisory Opinion now provides a legal springboard for further litigation and the protection of health and survival.

The health sector, a key protector of people's health and survival, is increasingly rising to the challenge. Health-care-related greenhouse gas emissions fell by 12% between 2021 and 2022 (indicator 3.5). As of March 2025, 112 (58%) of 193 WHO member states had completed a Vulnerability and Adaptation assessment, evaluating health vulnerabilities, adaptive capacity, and adaptation needs, while 116 (60%) member states had completed a Health National Adaptation Plan (indicators 2.1.1 and 2.1.2). The provision of climate change education for health professionals is growing, building capacity for further progress (indicator 2.2.5). The Global Action Plan on Climate Change and Health, adopted at the 78th World Health Assembly, now opens new opportunities for WHO, countries, and key stakeholders to advance climate change actions that protect and promote health.



An urgent call to action: all hands on deck

The science is unequivocal. Concrete and meaningful actions are urgently needed to protect the world's populations from the climatic changes that have now become unavoidable, and to prevent an increase of climate change threats that exceeds possibilities of adaptation.

High greenhouse gas-emitting countries and corporations must urgently reduce their emissions to prevent climatic changes to exceed our capacity to adapt. However, amid backsliding of commitments from some key decision makers and world leaders, the growing leadership of other actors – local governments, civil society organisations, private sector organisations, local communities, and, importantly, the health sector – offers promise for delivering the urgently needed system-wide transformation that prioritises prosperous economies and improved health. Community-led action, litigation and civil society organisations are forging new avenues to hold governments and corporations to account in their duty to respond to the evidence and protect people's lives, health, and wellbeing. Crucially, the economic momentum provided by the growth of the clean energy sector can offer new opportunities to tackle the biggest single largest source of greenhouse gas emissions, while providing access to healthier energy and cleaner air.

As the urgency of responding to climate change grows, delivering this health-protecting transformation requires widespread support from all sectors of society. The growth of science-denying populism, misinformation, and disinformation demands concerted efforts by the scientific community, press, world leaders, and social media to break communications silos, and rigorously and effectively build awareness of the scientific evidence on climate change and health. This awareness will be key to inform and enable an evidence-based, health-protecting response.

The evidence in this report reveals priorities and opportunities to deliver these actions, and realise transformational public health gains.

With the threats to people's lives and health growing, delivering health-protective, equitable, and just transition requires all hands on deck. There is no time left for further delay.