THE LANCET COUNTDOWN ON HEALTH AND CLIMATE CHANGE

HEALTH EVIDENCE TO INFORM MITIGATION DISCUSSIONS AT COP31

GLOBAL CLIMATE & HEALTH ALLIANCE

10 YEARS
LANCET COUNTDOWN: TRACKING PROGRESS ON HEALTH AND CLIMATE CHANGE
In collaboration with Wellcome

A decade tracking progress on health and climate change

This paper, developed by the Lancet Countdown on Health and Climate Change and the Global Climate and Health Alliance (GCHA), is designed to support Parties and other stakeholders in incorporating health evidence into mitigation discussions at COP31. Drawing primarily on evidence from the 2026 Report of the Lancet Countdown[1], it outlines the health consequences of delayed greenhouse gas emissions reductions, the health benefits of reducing fossil fuel combustion and short-lived climate pollutants, and the implications of these findings for mitigation investment and implementation.



Mitigation will be considered through several processes at COP31 and beyond

- The **Sharm el-Sheikh Mitigation Ambition and Implementation Work Programme (MWP)** provides a forum for discussing opportunities, challenges and actions to scale up mitigation ambition and implementation. With its current mandate concluding in 2026, Parties are expected to consider its continuation at COP31.
- The **Global Stocktake (GST)** will move into its second cycle at COP31, providing an opportunity to assess progress and strengthen implementation of climate action. The mitigation component of the GST remains a key avenue for informing ambition and tracking progress towards global climate goals.
- The **United Arab Emirates Just Transition Work Programme (JTWP)** addresses pathways for achieving sustainable and equitable transitions. COP31 will review the programme's effectiveness and efficiency and consider its future direction, including discussions on further operationalising support for just transitions.
- **The Forum on the Impact of the Implementation of Response Measures** provides a space to address the economic and social consequences of climate mitigation policies and actions, supporting understanding of how transitions affect workers, communities and economies.
- Beyond negotiated outcomes, the **COP30 Presidency's roadmaps** on transitioning away from fossil fuels and halting deforestation seek to advance implementation of the first GST.
- The **COP31 Presidency Global Electrification Pledge** to raise share of final energy demand met by electricity to 35% by 2035.
- The **COP30-COP31 Presidencies' Global Implementation Accelerator (GIA)** supports voluntary action to accelerate implementation of nationally determined contributions (NDCs), while the Belém Mission to 1.5 identifies high-impact solutions, barriers and opportunities for international cooperation and investment.

Health evidence can inform these discussions by demonstrating the consequences of continued emissions, the health and associate economic benefits of climate change mitigation, and by identifying opportunities to prevent disease and premature mortality, and strengthening the evidence base for equitable mitigation implementation.

Urgent mitigation is vital to address intensifying climate-related health impacts

Climate change drives physical and mental health, impacts including those related to increased expsoure to heat and other extreme weather events, increased risk of infectious disease transmission, and those related to climate-driven deterioration of food insecurity and nutritional outcomes. Meanwhile, the drivers of climate change, including continued dependence on fossil fuels and unsustainable food systems, also cause substantial harm to health through air pollution, unhealthy diets, and environmental degradation. Climate action can therefore reduce the health risks associated with climate change while delivering immediate health benefits through cleaner air, healthier diets, and more resilient communities.

Further warming will increase risks to health: the World Meteorological Organization (WMO) estimates a 75% probability that the five-year global temperature average for 2026–2030 will exceed 1.5°C above pre-industrial levels at least temporarily.[2] The UN Environment Programme report on "Limiting Overshoot – Navigating exceedance of 1.5° C and pathways towards return" finds that global efforts to reduce greenhouse gas emissions have not been ambitious enough to prevent global warming from crossing 1.5° C within the next few years.[3] Reducing greenhouse gas emissions can help limit this heating and therefore limit the health risks, while measures that reduce fossil fuel combustion and harmful air pollutants can deliver more immediate health benefits.

Four health considerations relevant to mitigation discussions at COP31

1 Recognise the health consequences of delayed greenhouse gas emissions reductions, and associated harms to the economy and development.

Continued greenhouse gas emissions are contributing to rising heat-related mortality, reduced labour capacity, food insecurity and changing conditions for infectious disease transmission. Accelerating mitigation is essential to limit further climate-related health harms.

2 Recognise the health benefits of reducing fossil fuel combustion and expanding access to clean, renewable energy

Reducing fossil fuel combustion can prevent premature deaths and illness associated with harmful air pollution. Expanding equitable access to renewable electricity and clean cooking can also reduce the disproportionate burden of polluting household energy on women, children and underserved populations, while protecting workers and communities throughout the energy transition.

3 Consider the near-term health benefits of reducing short-lived climate pollutants (SLCPs)

Reducing emissions of short-lived climate pollutants (SLCPs), including methane, black carbon, tropospheric ozone, and hydrofluorocarbons (HFCs) can improve air quality, prevent respiratory and cardiovascular disease, and protect food security, while contributing to limiting near-term warming.

4 Account for the health and economic costs of continued emissions in mitigation investment and implementation

Climate change and air pollution impose substantial health losses, and associated economic costs from reduced labour productivity, absenteeism, increased healthcare costs, broader economic losses. Evidence on these burdens, alongside energy investment and fossil fuel subsidies, can inform consideration of mitigation finance and implementation.

1 RECOGNISE THE HEALTH CONSEQUENCES OF DELAYED GREENHOUSE GAS EMISSIONS REDUCTIONS AND ASSOCIATED HARMS TO THE ECONOMY AND DEVELOPMENT



Continued greenhouse gas emissions are increasing climate-related health risks. The International Energy Agency reports that energy-related CO_2 emissions increased by 0.8% in 2024 to a record 37.8 Gt.[4] Emissions across sectors drive climate impacts including:

- **Heat:** 83% of globally experienced heatwave days were directly attributed to climate change in 2025. Heat was associated with a record 710,000 deaths globally in 2023, of which 71.5% were attributable to climate change *(Indicators 1.1.1 and 1.1.5)*. Heat exposure also resulted in an estimated 573 billion potential work hours lost, contributing to US$1.07 trillion in potential income losses globally, in 2025 *(Indicators 1.1.3 and 4.1.3)*.
- **Food security**: Increased exposure to heatwave days and drought months in 2024 was associated with 127.9 million additional people experiencing moderate or severe food insecurity compared with 1981–2010 *(Indicator 1.4)*. These impacts threaten livelihoods and nutrition, particularly among populations already experiencing food insecurity.
- **Infectious disease:** Annual average dengue transmission suitability increased by 24% for Aedes albopictus and 7% for Aedes aegypti, between 1981–1990 and 2016–2025 *(Indicator 1.3.1)*. Moreover, a record 92,672 km of coastline was environmentally suitable for Vibrio transmission for at least one day, 20% above the 2006–2015 average, with an estimated 738,000 cases of vibriosis in 2025 *(Indicator 1.3.2)*.

Accelerating greenhouse gas emissions reductions is essential to limit the escalation of these impacts and protect populations already experiencing high exposure and vulnerability.

Text for consideration

Just Transition Work Programme; Mitigation Work Programme

Recognizes that [just transition / mitigation] pathways offer opportunities to protect health by limiting climate-related risks, including heat-related mortality and illness, food insecurity and climate-sensitive infectious diseases.

Just Transition Work Programme

Invites relevant health experts and public-health institutions to contribute to dialogues, technical processes and other arrangements established under the UAE Just Transition Work Programme and its associated mechanism, as appropriate, to inform consideration of the health impacts and benefits of just transition pathways.

2 RECOGNISE THE HEALTH BENEFITS OF REDUCING FOSSIL FUEL COMBUSTION AND EXPANDING ACCESS TO CLEAN, RENEWABLE ENERGY

Reducing fossil fuel combustion offers immediate opportunities to protect health by reducing exposure to harmful air pollution, alongside limiting greenhouse gas emissions. In 2023, ambient $PM_{2.5}$ from fossil fuel combustion was associated with 2.78 million deaths globally *(Indicator 3.2.1).* A just and equitable transition from fossil fuels to renewable energy can offer gains for:

- **Outdoor air pollution:** Reductions in fossil fuel-derived $PM_{2.5}$ across 70 countries have contributed to approximately 323,000 deaths avoided annually, showcasing how fossil fuel combustion across electricity generation, industry and transport can prevent premature mortality and disease through improved air quality, while supporting greenhouse gas emissions reductions. Despite these gains, 2.78 million deaths each year are still associated to persistent exposure to fossil fuel-derived outdoor air pollution, and therefore preventable through elimination of fossil fuel burning *(Indicator 3.2.1).*
- **Equitable access to safe, reliable affordable energy:** Expanding access to reliable renewable electricity and clean cooking can reduce reliance on polluting household fuels and associated health risks. Equitable access is particularly important for underserved communities, where the health benefits of electrification and reduced household air pollution remain largely unrealised. In transport, renewable-powered electrification, public transport and active mobility can also reduce exposure to harmful emissions, with additional health benefits from physical activity. Electrification can reduce household and urban air pollution, but crucially must be powered by renewable energy, and be implemented as part of a just and equitable transition away from fossil fuels, to avoid perpetuating the health harms of fossil fuels.

- **Reduced occupational risks:** The health benefits of the energy transition must also extend to workers and communities involved in delivering it. Renewable-energy infrastructure depends on supply chains that include mineral extraction, processing, manufacturing and recycling. WHO's occupational-health guidance identifies potential exposure to hazardous substances and unsafe working conditions in green industries, emphasising the importance of safeguards throughout production and supply chains. Worker protections, pollution controls, health-impact assessments and meaningful involvement of affected communities can help prevent energy-transition projects from reproducing the health harms associated with extractive industries.[5]

Addressing the full health burden of fossil fuels requires reducing the harms associated with their extraction and combustion. Therefore, WHO also identifies risks of increased local air pollution and CO_2 leakage associated with technologies such as fossil fuel carbon capture and storage (CCS).[6] Similarly, geoengineering approaches, such as solar radiation modification (SRM), would not reduce emissions or harmful air pollution from fossil fuel combustion.[7] If used to justify continued fossil fuel production and consumption, these approaches would leave substantial health risks associated with fossil fuel extraction and combustion unaddressed.

Text for consideration

Just Transition Work Programme; Mitigation Work Programme

Recognizes the importance of equitable access to affordable, reliable and renewable energy in just transition pathways, including the health benefits of reducing reliance on polluting household fuels, particularly for women, children and populations in vulnerable situations.

Encourages Parties, in accordance with national circumstances and priorities, to consider occupational and environmental health risks throughout energy transition supply chains, including mineral extraction, processing and manufacturing, and to strengthen measures that protect workers and affected communities from harmful exposures.

Invites the inclusion of public-health expertise, alongside other relevant expertise, in the activities and arrangements supporting the implementation of the mitigation work programme, including through relevant dialogues, technical exchanges and knowledge-sharing processes, to inform consideration of the health benefits and potential health risks associated with transition pathways.

3 CONSIDER THE NEAR-TERM HEALTH BENEFITS OF REDUCING SHORT-LIVED CLIMATE POLLUTANTS

Reducing short-lived climate pollutants (SLCPs), including methane, black carbon, tropospheric or ground -level ozone, and hydrofluorocarbons (HFCs), offers opportunities to protect health while limiting near-term warming. According to WHO, SLCP reductions can deliver relatively rapid health benefits through improved air quality, while complementing sustained reductions in CO_2 emissions.[8]

Methane is a potent greenhouse gas that contributes to the formation of ground-level ozone, a harmful air pollutant associated with adverse respiratory outcomes, including exacerbation of asthma and premature mortality. Sources of methane include fossil fuel production and use, agriculture, and waste. Reducing methane emissions can therefore improve air quality, protect health, and contribute to limiting warming.

Black carbon is a component of fine particulate matter ($PM_{2.5}$) produced by incomplete combustion from sources including diesel engines, household energy use, and open burning. Exposure to $PM_{2.5}$ is associated with cardiovascular and respiratory disease and premature mortality. Black carbon also increases local heating. Reducing black carbon emissions can therefore generate substantial health benefits through cleaner air, while helping address climate change.

Tropospheric ozone is itself a harmful air pollutant that damages human health and reduces crop yields. Lower ozone concentrations can therefore help improve respiratory health while supporting food security.

HFCs are potent greenhouse gases that contribute to near-term warming. Reducing HFC emissions can support efforts to limit climate change and its associated health risks.

WHO identifies multiple health and development benefits from reducing SLCP emissions. These benefits provide a strong rationale for accelerating action on SLCPs across sectors including energy, transport, agriculture, industry, buildings, and waste management. Reducing SLCP emissions can improve air quality, prevent illness and premature mortality, and contribute to limiting near-term warming, complementing sustained reductions in CO_2 emissions and supporting both climate and public health objectives.

Text for consideration

Just Transition Work Programme; Mitigation Work Programme; or other negotiations.

Recognizing the potential health benefits of reducing short-lived climate pollutants, including methane and black carbon, through improvements in air quality, reductions in respiratory and cardiovascular health risks, and protection of food security, alongside their contribution to limiting near-term warming.

4 ACCOUNT FOR THE HEALTH AND ECONOMIC COSTS OF CONTINUED EMISSIONS IN MITIGATION INVESTMENT AND IMPLEMENTATION

The health impacts of air pollution and climate-related heat impose substantial economic costs, highlighting the wider consequences of continued fossil fuel combustion and delayed climate action. Incorporating health impacts into mitigation investment assessments can help account for benefits that may otherwise be overlooked when decisions focus primarily on emissions reductions or direct financial costs.

The 2026 Report of the Lancet Countdown estimates that the monetised value of mortality associated with ambient air pollution reached US$7.25 trillion in 2023, equivalent to 6.5% of global GDP *(Indicator 4.1.4).* The monetised value of heat-related mortality averaged US$320 billion annually between 2016 and 2025, equivalent to 0.25% of global GDP and 47% higher than during 2006–2015 *(Indicator 4.1.2)*. The physical toll of heat exposure also leads to losses in labour productivity, and led in 2025 to a loss of 573 billion potential loss hours, and an estimated US$ 1.07 trillion lost from the global economy from associated income losses. Lower income countries were most affected as proportion of GDP lost. These substantial health and economic costs underscore the importance of directing energy investments towards cleaner alternatives that can reduce emissions and deliver health benefits.

Energy investment decisions influence greenhouse gas emissions and population exposure to harmful air pollution. Global clean-energy investment reached US$2.10 trillion in 2025, exceeding fossil fuel investment by 82% *(Indicator 4.3.1).* Investment in non-combustion renewable energy can help reduce the health burden associated with fossil fuel pollution where it displaces polluting energy sources.

At the same time, the 87 countries reviewed by the Lancet Countdown generated a net fossil fuel subsidy of US$808 billion in 2024. 80% of these had a negative net carbon price, and ten countries allocated more public funds to fossil fuel subsidies than to health *(Indicator 4.3.2).* Continued public support for fossil fuel production and consumption can sustain activities associated with greenhouse gas emissions and harmful air pollution. This also illustrates the scale of financial resources supporting fossil fuels, despite the associated health burdens and competing demands on public expenditure.

Considering avoided mortality, reduced exposure to air pollution, and other health outcomes alongside mitigation potential and financing requirements can provide a more complete assessment of mitigation investment. These considerations are relevant to the implementation of national climate commitments and international initiatives seeking to accelerate investment in emissions reductions.

Text for consideration

Just Transition Work Programme; Mitigation Work Programme, or other negotiations

Recognizing the health and economic consequences of climate change and air pollution, and the health and economic opportunities of [just transition / mitigation] pathways, including the avoided costs of premature mortality and reduced productivity.

Evidence

1. Romanello M, Walawender M, Israelsson J et al. **The 2026 report of the Lancet Countdown on health and climate change: A decade of escalating health harms and a decisive moment for all.** The Lancet 2026; published online October 2026. https://doi.org/10.1016/S0140-6736(26)01779-4
2. World Meteorological Organization (WMO). **Global Annual to Decadal Climate Update 2026–2035.** Geneva: WMO; 2026.
3. United Nations Environment Programme (UNEP). **Limiting Overshoot: Navigating Exceedance of 1.5°C and Pathways Towards Return.** Nairobi: UNEP; 2026.
4. International Energy Agency (IEA). **Global Energy Review 2025**: CO_2 Emissions. Paris: IEA; 2025.
5. World Health Organization (WHO). **Health in the green economy: Occupational health. Health co-benefits of climate change mitigation.** Geneva: WHO; 2021.
6. World Health Organization (WHO). **The 1.5 Health Report: Synthesis on Health and Climate Science in the IPCC SR1.5.** Geneva: WHO; 2018. p. 14.
7. United Nations Environment Programme (UNEP). **Solar Radiation Modification: Scientific Evidence Does Not Support SRM as a Viable Climate Solution.** Nairobi: UNEP; 2026.
8. World Health Organization (WHO). **WHO Policy Brief: Short-lived Climate Pollutants (SLCPs).** Geneva: WHO; 2022.