



COP26 SPECIAL REPORT ON CLIMATE CHANGE AND HEALTH

THE HEALTH ARGUMENT FOR CLIMATE ACTION



**COP26 SPECIAL REPORT ON
CLIMATE CHANGE AND HEALTH**

**THE HEALTH
ARGUMENT
FOR CLIMATE
ACTION**

In memory of Ella Kissi-Debrah – and all other children
who have suffered and died from air pollution
and climate change.



This is an advanced proof and may be subject to editorial corrections.

COP26 special report on climate change and health: the health argument for climate action

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Foreword

Extreme heat, floods, droughts, wildfires and hurricanes: 2021 has broken many records. The climate crisis is upon us, powered by our addiction to fossil fuels. The consequences for our health are real and often devastating.

Climate change impacts health in all countries, but it hits people in low- and middle-income countries the hardest, especially small island developing states, whose very existence is under threat from rising sea levels. Any delay in acting on this global health threat will disproportionately affect the most disadvantaged around the world. The COVID-19 pandemic is a visceral example of the inequitable impacts of such a global threat. To fully address the urgency of both these crises, we need to confront the inequalities that lie at the root of so many global health challenges.

Health and equity are central to achieving the goals of the Paris Agreement and to making COP26 a success. Protecting health requires action well beyond the health sector, in energy, transport, nature, food systems, finance and more. The ten recommendations outlined in this report – and the action points, resources and case studies that support them – provide concrete examples of interventions that, with support, can be scaled up rapidly to safeguard our health and our climate.

The recommendations are the result of extensive consultations with health professionals, organizations and stakeholders worldwide, and represent a broad consensus statement urging governments to act to tackle the climate crisis, restore biodiversity, and protect health.

Putting that into practice means investing in a healthier, fairer, and more resilient world. Advanced economies, in particular, have a once-in-a-generation opportunity to demonstrate true global solidarity, both in supporting an equitable response to COVID-19, and by making health central to the implementation of the renewed climate commitments that they are making at COP26. It is the only way for us to get out of the current health crisis and prevent future ones.

The health arguments for rapid climate action have never been clearer. I hope this report can guide policymakers and practitioners from across sectors and across the world to implement the transformative changes needed.

Let's get to work.

Dr Tedros Adhanom Ghebreyesus
Director-General
World Health Organization

Foreword

As the last two years have shown us, public, planetary and economic health are inextricably linked. The race to a zero-emissions economy before 2050 is, therefore, a race to a healthy, clean and resilient future.

As highlighted by the IPCC Sixth Assessment Report published earlier this year, we need to halve greenhouse gas emissions between 2020 and 2030 while reversing nature loss in order to reach net zero and limit global warming to a 1.5°C. But time is running short, and every fraction of a degree threatens to cause more death and economic destruction.

This is going to require full systems change and collaboration across all sectors. As highlighted by this report, these include energy, transport, built environment and agriculture amongst multiple other sectors. However, we also need to act within the healthcare sector given the scale of the economy and emissions it represents. The World Health Organization estimates that globally the spending on health reached 10% of GDP in 2018, and Health Care Without Harm estimates that in 2019 the sector was responsible for 4.4% of net global emissions.

We have seen good progress to date on the UN Race to Zero, where 46 healthcare institutions representing over 3,200 healthcare facilities across 18 countries have joined. In addition to this, over 28% of major pharmaceutical and medical technology companies by revenue have joined the campaign. But we need to keep accelerating our efforts to both cut emissions and build resilience to the impacts of climate change, and move from ambition to action within the 2020s. As the healthcare sector is already demonstrating, health can enable transformational change in other sectors.

At the same time, we must adapt to thrive in spite of impacts such as floods, droughts and extreme temperatures. Through the UN Race to Resilience, by 2030 we are mobilising businesses, investors, cities and regions to build the resilience of the 4 billion people most at risk.

On top of that, we need to continue to improve the quality and delivery of accessible healthcare across the globe. The future of healthcare needs to be reimagined, where we can build a world that is zero carbon, resilient, and healthy for all. In this future, there is clean air, food security, more access to nature – a world where our children can thrive. I welcome the clear recommendations from this report which show the steps we must take together to build that future.

Nigel Topping
COP26 High-Level Climate Action Champion

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Abbreviations

BAR-HAP	Benefits of Action to Reduce Household Air Pollution tool
CaRBonH	Carbon Reduction Benefits on Health calculation tool
CBD	Convention on Biological Diversity
CCAC	Climate and Clean Air Coalition
CHEST	Clean Household Energy Solutions Toolkit
COP	Conference of the Parties
FAO	Food and Agriculture Organization of the United Nations
GAPH-TAG	Global Air Pollution and Health Technical Advisory Group
GBF	Global Biodiversity Framework
GDP	gross domestic product
HEAT	Health Economic Assessment Tool for walking and cycling
HEPA	Health and Energy Platform of Action
HNAP	health national adaptation plan
IPCC	Intergovernmental Panel on Climate Change
iSThAT	Integrated Sustainable Transport and Health Assessment tool
IUCN	International Union for the Conservation of Nature
NAPs	national adaptation plans
NBSAPs	national biodiversity strategies and action plans
NCDS	noncommunicable diseases
NDCs	nationally determined contributions
SDGs	Sustainable Development Goals
SIDS	small island developing states
SLCPs	short-lived climate pollutants
UHC	universal health coverage
UNFCCC	United Nations Framework Convention on Climate Change
V&A	Vulnerability and Adaptation Assessment
WASH	water, sanitation and hygiene
WHO	World Health Organization



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Executive Summary

The 10 recommendations in the COP26 Special Report on Climate Change and Health propose a set of priority actions from the global health community to governments and policy makers, calling on them to act with urgency on the current climate and health crises.

The recommendations were developed in consultation with over 150 organisations and 400 experts and health professionals. They are intended to inform governments and other stakeholders ahead of the 26th Conference of the Parties (COP26) of the United Nations Framework Convention on Climate Change (UNFCCC) and to highlight various opportunities for governments to prioritise health and equity in the international climate movement and sustainable development agenda. Each recommendation comes with a selection of resources and case studies to help inspire and guide policymakers and practitioners in implementing the suggested solutions.

The next few years present a crucial window for governments to integrate health and climate policies in their COVID-19 recovery packages

(*recommendation 1*) and international climate commitments (*recommendation 2*). While near-term pandemic responses will largely set the pace and direction of health and climate goals, ambitious national climate commitments will be crucial to sustain a healthy recovery in the mid- to long-term. To achieve the goals of the Paris Agreement, health and equity need to be placed at the centre of the United Nations climate negotiations going forward.

The health benefits from climate actions (*recommendation 3*) are well documented and offer strong arguments for transformative change – and this is true across many priority areas for action: adaptation and resilience (*recommendation 4*), the energy transition (*recommendation 5*), clean transport and active mobility (*recommendation 6*), nature (*recommendation 7*), food systems (*recommendation 8*) and finance (*recommendation 9*). The health sector and health community are a trusted and influential - but often overlooked - climate actor that can enable transformational change to protect people and planet (*recommendation 10*).

Recommendations on climate change and health:

1

Commit to a healthy recovery.

Commit to a healthy, green, and just recovery from COVID-19.

2

Our health is not negotiable.

Place health and social justice at the heart of the UN climate talks.

3

Harness the health benefits of climate action.

Prioritise those climate interventions with the largest health-, social- and economic gains.

4

Build health resilience to climate risks.

Build climate-resilient and environmentally sustainable health systems and facilities, and support health adaptation and resilience across sectors.

5

Create energy systems that protect and improve climate and health.

Guide a just and inclusive transition to renewable energy to save lives from air pollution, particularly from coal combustion. End energy poverty in households and health care facilities.

6

Reimagine urban environments, transport, and mobility.

Promote sustainable, healthy urban design and transport systems, with improved land-use, access to green and blue public space, and priority for walking, cycling and public transport.

7

Protect and restore nature as the foundation of our health.

Protect and restore natural systems, the foundations for healthy lives, sustainable food systems and livelihoods.

8

Promote healthy, sustainable, and resilient food systems.

Promote sustainable and resilient food production and more affordable, nutritious diets that deliver on both climate and health outcomes.

9

Finance a healthier, fairer, and greener future to save lives.

Transition towards a wellbeing economy.

10

Listen to the health community and prescribe urgent climate action.

Mobilise and support the health community on climate action.

The health impacts of climate change

Climate change is the single biggest health threat facing humanity (1), and health professionals worldwide are already responding to the health harms caused by this unfolding crisis (2).

The Intergovernmental Panel on Climate Change (IPCC) has concluded that to avert catastrophic health impacts and prevent millions of climate change-related deaths, the world must limit temperature rise to 1.5°C (3). Past emissions have already made a certain level of global temperature rise and other changes to the climate inevitable. Global heating of even 1.5°C is not considered safe, however; every additional tenth of a degree of warming will take a serious toll on people's lives and health (4).

While no one is safe from these risks, the people whose health is being harmed first and worst by the climate crisis are the people who contribute least to its causes, and who are least able to protect themselves and their families against it - people in low-income and disadvantaged countries and communities (5).

The climate crisis threatens to undo the last fifty years of progress in development, global health, and poverty reduction, and to further widen existing health inequalities between and within populations (6). It severely jeopardises the realisation of universal health coverage (UHC) in various ways – including by compounding the existing burden of disease and by exacerbating existing barriers to accessing health services, often at the times when they are most needed (7). Over 930 million people - around 12% of the world's population - spend at least 10% of their household budget to pay for health care. With the poorest people largely uninsured, health shocks and stresses already currently push around 100 million people into poverty every

year, with the impacts of climate change worsening this trend (8,9).

Climate change is already impacting health in a myriad of ways, including by leading to death and illness from increasingly frequent extreme weather events, such as heatwaves, storms and floods, the disruption of food systems, increases in zoonoses and food-, water- and vector-borne diseases, and mental health issues. Furthermore, climate change is undermining many of the social determinants for good health, such as livelihoods, equality and access to health care and social support structures (Figure 1). These climate-sensitive health risks are disproportionately felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, poor communities, migrants or displaced persons, older populations, and those with underlying health conditions (7,10).

Although it is unequivocal that climate change affects human health, it remains challenging to accurately estimate the scale and impact of many climate-sensitive health risks. However, scientific advances progressively allow us to attribute an increase in morbidity and mortality to human-induced warming (11), and more accurately determine the risks and scale of these health threats (12).

In the short- to medium-term, the health impacts of climate change will be determined mainly by the vulnerability of populations, their resilience to the current rate of climate change and the extent and pace of adaptation (6). In the longer-term, the effects will increasingly depend on the extent to which transformational action is taken now to reduce emissions and avoid the breaching of dangerous temperature thresholds and potential irreversible tipping points (4).

Figure 1

An overview of climate-sensitive health risks, their exposure pathways and vulnerability factors. Climate change impacts health both directly and indirectly, and is strongly mediated by environmental, social and public health determinants.

Climate-sensitive health risks

Health outcomes



Injury and mortality from extreme weather events



Heat-related illness



Respiratory illness



Water-borne diseases and other water-related health impacts



Zoonoses



Vector-borne diseases



Malnutrition and food-borne diseases



Noncommunicable diseases (NCDs)



Mental and psychosocial health

Health systems & facilities outcomes



Impacts on healthcare facilities



Effects on health systems

Vulnerability

Exposure pathways

- Extreme weather events
- Heat stress
- Air quality
- Water quality and quantity
- Food security and safety
- Vector distribution & ecology

Vulnerability factors

- Demographic factors
- Geographic factors
- Biological factors & health status
- Sociopolitical conditions
- Socioeconomic factors

Health system capacity & resilience

- Leadership & governance
- Health workforce
- Health information systems
- Essential medical products & technologies
- Service delivery
- Financing

Climate change

The health argument for climate action

Taking rapid and ambitious action to halt and reverse the climate crisis has the potential to bring many benefits, including for health. Co-benefits are defined as: the positive effects that a policy or measure aimed at one objective might have on other objectives, thereby increasing the total benefits for society or the environment (13).

The public health benefits resulting from ambitious mitigation efforts would far outweigh their cost (14). Strengthening resilience and building adaptive capacity to climate change, on the other hand, can also lead to health benefits by protecting vulnerable populations from disease outbreaks and weather-related disasters, by reducing health costs and by promoting social equity. The health co-benefits from climate change actions are well evidenced, offer strong arguments for transformative change, and can be gained across many sectors, including in energy generation, transport, food and agriculture, housing and buildings, industry, and waste management (6,15).

For example, many of the same actions that reduce greenhouse gas emissions also improve air quality, and support synergies with many of the Sustainable Development Goals (SDGs) (16). Some measures - such as facilitating walking and cycling - improve health through increased physical activity, resulting in reductions in respiratory diseases, cardiovascular diseases, some cancers, diabetes and obesity (17). Another example is the promotion of urban green spaces, which facilitate climate mitigation and adaptation while also offering health co-benefits, such as reduced exposure to air pollution, local cooling effects, stress relief, and increased recreational space

for social interaction and physical activity (18,19). A shift to more nutritious plant-based diets in line with WHO recommendations, as a third example, could reduce global emissions significantly, ensure a more resilient food system, and avoid up to 5.1 million diet-related deaths a year by 2050 (20).

Research has shown that climate action aligned with Paris Agreement targets would save millions of lives due to improvements in air quality, diet and physical activity, among other benefits (21). However, many climate decision-making processes currently do not account for health co-benefits and their economic valuation. The 2021 WHO Health and Climate Change Global Survey of governments found that less than 1 in 5 countries have conducted an assessment of the health co-benefits of national climate mitigation policies (22), while a 2021 WHO review of Nationally Determined Contributions (NDCs) found just 13% of current NDCs commit to quantifying or monitoring the health co-benefits of climate policies or targets (23).

While there are significant health co-benefits available for various climate interventions, which can act as important ethical and economic incentives, some climate mitigation and adaptation policies may not maximise health gains or may potentially cause harm. Additionally, several challenges and barriers remain for the comprehensive inclusion of health in the cost assessment of climate policies (24). It is therefore critical that health and other experts are fully involved in climate decision-making processes at all levels, to ensure health and equity considerations are well understood and accounted for when developing climate policies (25).

WHO Expert Working Group on the Health Benefits of Climate Change Mitigation

In recognition of the growing field of research on the public health gains of climate change mitigation, and the importance of this evidence to catalyse global action to reduce greenhouse gas emissions, WHO has established an Expert Working Group on the Health Benefits of Climate Change Mitigation as part of its Global Air Pollution and Health Technical Advisory Group (GAPH-TAG).

The Working Group brings together global experts to review and advise on actions that both address climate change and improve human health, primarily through improved air quality. As part of its work, the GAPH-TAG will provide guidance and tools to national stakeholders to carry out assessments of the health benefits or harms associated with interventions to reduce carbon emissions.

By emphasising the health implications of climate mitigation policies and providing recommendations on best practices, the initiative will empower national health policymakers to elevate the health argument for ambitious climate action, and ensure health is represented in national and global planning processes (26).



Case study

Building a healthy, resilient future in Small Island Developing States

Small Island Developing States (SIDS) face a particular set of urgent health threats. They are uniquely vulnerable to the impacts of climate change, making up two thirds of the countries that suffer the highest relative losses from climate disasters each year. At the same time, they carry heavy burdens of noncommunicable diseases (NCDs), malnutrition, and now also the impacts of COVID-19. Together these threats are contributing to unprecedented economic, and even existential, crises for these States. Most SIDS are classified economically as middle-income or above, though they face severe economic vulnerabilities and lack access to external support relative to their needs (27).

In the face of all these challenges, SIDS have shared strengths. They are leaders in the international negotiations on climate change, have well-established regional support mechanisms and collaborative bodies, and have a rich history of commitment to health and sustainable development (28).

Any effort to ensure a healthy future for SIDS must allow their people to survive and thrive by reducing global carbon emissions to mitigate climate impacts. It must also strengthen the resilience of health systems and health-determining sectors, such as food and nutrition, water and sanitation, and social protection, to protect and enhance the health and wellbeing of the people of SIDS in the face of a changing climate.

WHO launched a Special Initiative on Climate Change and Health in SIDS at the 23rd Conference of the Parties (COP23) of the UNFCCC held in Bonn in 2017, in collaboration with the UNFCCC Secretariat and the Fijian Presidency of the COP23 (29). WHO, with SIDS Member States, developed a Global Plan of Action, which sets out key actions to ensure all health systems in SIDS will be resilient to climate change by 2030 (30). The SIDS have been among the leaders globally in assessing risks and setting national agendas for climate change and health (31).

WHO is reinforcing its strategic actions to support SIDS in addressing their top health threats. In June 2021, WHO hosted a SIDS Summit for Health that brought together SIDS heads of states, ministers of health, and others, to frame priority actions and intensify collaboration.

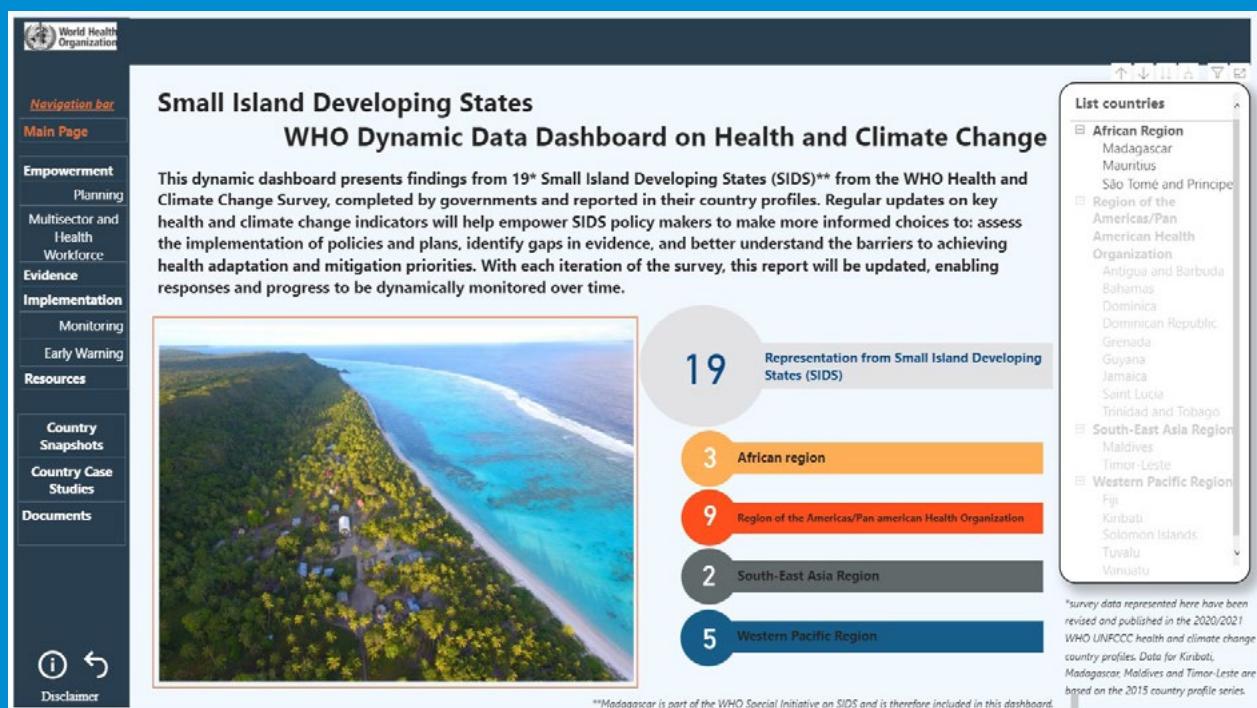
In the outcome statement of the Summit, the representatives of SIDS put forward their commitments and calls to action to achieve a healthy, resilient future in SIDS (32). These include fully addressing health in the climate change movement, scaling up integrated care for NCDs and mental health needs, enabling healthy diets and biodiversity, pursuing equity in access to vaccines and other innovations, more equitable and resilient health systems, stronger workforces and supply systems, as well as sustainable financing for climate and health goals. They called for WHO to support a SIDS Leaders Group for Health and SIDS Voices for Health Forum, to amplify SIDS voices, promote collaborative action and galvanise targeted support (33).

The efforts of SIDS highlight that governments can put forward a joint vision for health and development that addresses the acute needs of this critical time, prioritising the most vulnerable and disadvantaged regions and communities.

Monitoring the progress and barriers on climate change and health in SIDS

The **Health and Climate Change Country Profiles**, developed by WHO and the UNFCCC Secretariat, are a key mechanism in WHO's efforts to monitor national progress on health and climate change. Country profiles are prepared in collaboration with ministries of health and other partners such as ministries of the environment and national meteorological services. They allow countries to strengthen their national evidence base for decision-making and measure progress in building climate-resilient health systems. Close to 100 country profiles have been developed, including for many SIDS.

As part of WHO's monitoring efforts and the WHO Special Initiative on Climate Change and Health in SIDS, a series of SIDS country profiles were created, illustrating the progress made by island states to date in responding to the health threats of climate change. A **dynamic data dashboard** visualises the country profile data and allows SIDS policy makers to monitor key health and climate change indicators, including to assess the implementation of policies and plans, identify gaps in evidence, and better understand the barriers to achieving health adaptation and mitigation priorities, including for implementation and monitoring.



Recommendations for climate change and health

The recommendations outlined in the COP26 Special Report have been developed by health professionals, organisations and stakeholders worldwide, and represent a broad consensus statement by the global health community on the actions that are needed to tackle the climate crisis, restore biodiversity, and protect health.

The recommendations were developed in consultation with over 150 organisations and over 400 experts and health professionals, through a series of consultations and workshops in all six WHO regions. They are intended to inform governments and other stakeholders ahead of the 26th Conference of the Parties (COP26) of the United Nations Framework Convention on Climate Change (UNFCCC).

COP26 is considered a crucial moment for the world's governments to commit to collective action on limiting climate change. The conference aims to operationalise the Paris Agreement on climate change, and Parties to the agreement are expected to bring forward national climate plans reflecting their highest possible ambition.

The ten recommendations, and their respective action points, highlight the urgent need and numerous opportunities for governments to prioritise health and equity in the international climate movement and the sustainable development agenda. Each recommendation is accompanied by a selection of resources and case studies to help inspire and guide policymakers and practitioners in implementing the proposed solutions.





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1

Commit to a healthy recovery.

Commit to a healthy, green and just recovery from COVID-19.



© Greenpeace / Vivek M.

Advanced proof

The COVID-19 pandemic has highlighted the close relationship between the health of people and the health of the planet, and has further exacerbated existing social injustices and vulnerabilities in our communities and our health systems. The pandemic has also provided an opportunity for building forward better, greener and more equitably (34).

The next few months and years provide a crucial window to align climate change and health goals. Governments can commit to a healthy and green recovery from COVID-19 by following an evidence-based path to a zero carbon, resilient, and inclusive global economy. This is in line with the WHO Manifesto Prescriptions and "Actionables", which offer governments a list of priority actions to achieve a green and healthy recovery from COVID-19 (35).

Action Points

Commit to a healthy recovery.

- 1 Align climate and health goals.** Align COVID-19 recovery efforts with the Paris Agreement goals and the WHO Manifesto for a healthy and green recovery.
- 2 Support a fossil-free recovery.** Commit to 100% green stimulus spending and an end to all fossil fuel subsidies, while also ensuring energy access for all.
- 3 Prevent and prepare for the next pandemic.** Improve the global capacity for pandemic prevention, preparedness, and response.
- 4 Include health in all policies.** Strengthen and support implementation of the Health-in-All-Policies approach at the national and subnational level.
- 5 Commit to vaccine equity.** Commit to vaccine equity and address the inequalities that lie at the root of the current climate and health crises.

1) Align climate and health goals.

Scientists, leaders, and the wider public have a growing understanding that unless everyone is safe, no one is safe when it comes to the multiple crises the world is grappling with. Short-term response and long-term recovery measures and economic stimulus packages therefore need to tackle these crises in tandem. The health community has repeatedly urged governments to align their COVID-19 recovery efforts with the Paris Agreement goals and the WHO Manifesto for a healthy and green recovery (36).

Recovery measures that align climate and health goals are driven by science, prioritise those interventions that bring health, social, cultural and environmental gains, and avoid locking in economic development patterns that will do permanent and escalating damage to the ecological systems that sustain all human health and livelihoods. Examples include setting measures that help avoid a rebound to pre-pandemic air pollution levels, creating more people-centred cities through improved active transport infrastructure (37), and ensuring the COVID-19 response strengthens health systems while reducing health inequities and other health risks at the same time (38).

2) Support a fossil-free recovery.

The burning of fossil fuels is killing us; causing millions of premature deaths every year through air pollutants, costing the global economy billions of dollars annually, and fueling the climate crisis (6). Governments and the private sector can support a green and healthy recovery from COVID-19 by: reforming energy subsidies so no public money goes to fossil fuel production; raising money from fossil fuel subsidy reform and taxes to be re-invested in a green recovery; ensuring that public money committed to energy-producing and -consuming activities goes to clean energy sources; while incentivising investments in clean energy and ensuring that no one is left behind in the energy transition (39,40).

3) Prevent and prepare for the next pandemic.

The COVID-19 pandemic has exacerbated health inequities and vulnerabilities, both within and between countries (38,41). Governments can reverse this trend by prioritising healthcare investments for those most at risk, strengthening the capacity of the health workforce, stepping up surveillance and research, addressing the root causes of zoonotic diseases, and investing recovery resources to build climate-smart health systems that are resilient, sustainable and low-carbon (42,43). A crucial first step would be to adopt the findings of the Independent Panel for Pandemic Preparedness and Response in order to bolster global resilience and solidarity (44).

4) Include health in all policies.

In order to tackle the converging crises of climate, nature, debt, and growing inequalities, and their grave consequences for the health of current and future generations, policy makers need to break out of their silos and strengthen collaboration and a whole-of-government approach. Governments have many tools at their disposal to ensure COVID-19 recovery initiatives have a positive impact on public health and sustainable development, such as Health Impact Assessments. They can strengthen and support implementation of the Health-in-All-Policies

approach at the national and subnational level by improving coordination, monitoring, budgeting and advisory structures (45). A crucial first step would be for health ministries and organisations to prioritise climate change in their own activities, policies and programmes. Secondly, health stakeholders should be included in all climate decision making processes, and vice versa.

5) Commit to vaccine equity.

The global failure to share vaccines equitably is taking its toll on some of the world's poorest and most vulnerable people. It will have a lasting and profound impact on socio-economic recovery in low- and lower-middle income countries. New variants of concern mean that the risks of infection have increased in all countries for people who are not yet protected by vaccination (46). As with any global crisis, until everyone is safe, no one is safe.

To fully address the urgency of the climate and health crises, governments need to commit to vaccine equity and address the inequalities that lie at the root of so many global health challenges, including the climate crisis. Any inaction on tackling vaccine inequity and climate change will have the largest health consequences for the most disadvantaged communities. Worldwide access to COVID-19 vaccines offers the best chance for slowing the coronavirus pandemic, saving lives, and securing a global recovery that is centred around equity, resilience, and sustainability (47).

Resources

WHO Manifesto for a healthy and green recovery from COVID-19.

Released by WHO in May 2020, the [Manifesto](#) calls for creating a healthier, fairer and greener world while resuscitating economies hit by the effects of COVID-19. The six Prescriptions of the Manifesto lay out concrete instructions for policy makers, national and local decision-makers, and other stakeholders, to contribute to a healthy recovery. These Prescriptions are accompanied by over 80 practical steps for implementation at the national and local level.

- The [Global Recovery Observatory](#) - an initiative by the Oxford University Economic Recovery Project and the UN environment programme – tracks the green recovery efforts of over 50 governments. The database showcases exemplary policy solutions, identifies opportunities, and direct governments towards more impactful and sustainable investment.

- The [Universal Health Coverage partnership](#) offers a political platform to ensure that all people and communities, without leaving anyone behind, receive the quality services they need, and are protected from health threats, without suffering financial hardship.
- [Five principles for a fossil-free recovery](#) – The International Institute for Sustainable Development has formulated five principles to enable a fossil-free recovery: end fossil fuel production subsidies, reform fossil fuel pricing, support clean energy, incentivise investment in clean electricity, and implement a just transition.
- [Health professionals worldwide](#) have called for a healthy, green recovery from COVID-19. In an open letter to G20 leaders, they urged governments to be guided by science-based decision-making and to avoid investing in polluting energy sources.
- The [recommendations for pandemic preparedness](#) by the independent panel will allow us to curb the COVID-19 pandemic and ensure we are more resilient and better prepared for future disease outbreaks and other health risks.
- The World Health Organization provides a useful set of [recommendations and examples on Health-in-All Policies interventions](#) that promote intersectoral collaborations.

Case Studies

- **Aligning the climate and health goals of member states in the WHO European Region.** The Working Group on Health in Climate Change, established under the European Environment and Health Process, brings together WHO Member States and other partners from the WHO European Region. The HIC provides a regional multilateral platform for dialogue and cooperation, and supports the integration of health considerations into national climate policies across the region. [Learn more here.](#)
- **A city-led green recovery from COVID-19 in Italy.** The city of Milan in Italy is working on a green recovery from COVID-19 that is rooted in the principles of equity and climate action. As part of the C40 Global Mayors COVID-19 Recovery Task Force, the city is cutting its emissions, freeing up public space, providing support to workers, and creating a more resilient and equitable city. [Learn more here.](#)
- **Solar fridges for vaccines.** An initiative developed by the GAVI Alliance is supporting health care facilities to use solar panels to power vaccine fridges. This ensures health care facilities, often with no other source of electrical power, are able to keep vaccines safe and ready to be used to prevent disease. [Learn more here.](#)
- **The future we choose - planning for a healthy recovery in Australia.** Over 100 health professionals and stakeholders in Australia came together in a series of workshops to develop a set of possible scenarios for the country to recover from COVID-19 and tackle climate change. The potential alternative futures they developed show how important today's policy decisions are for the health and wellbeing of people. [Learn more here.](#)
- **ASEAN countries join forces to exit the pandemic.** In a united response to COVID-19, the countries of the ASEAN grouping developed the Comprehensive Recovery Framework, which outlines strategies to ensure that the economies in the region recover from the pandemic and emerge as more resilient, inclusive, and sustainable societies. [Learn more here.](#)

Find more case studies on the [WHO website](#).

2

Our health is not negotiable.

Place health and social justice at the heart of the UN climate talks.



Climate change is the biggest global threat to human health, and the Paris Agreement is potentially the strongest health agreement of the 21st century (6). Health, therefore, is a powerful argument to enhance climate ambition and reduce global inequality.

In the lead up to COP26, the global health community has repeatedly called on governments to submit ambitious climate plans. It urges for an ambitious outcome at COP26 that systematically places health and social justice at the heart of the UN climate talks, to safeguard the health of current and future generations. In the years to come, governments' commitments need to be implemented swiftly and transparently in order to avoid the worst climate impacts, reduce growing inequalities, and ensure health and prosperity for all.

Action Points

Our health is not negotiable.

- 1 Close the 1.5°C gap to stay alive.** Lead a step-change in ambition and submit ambitious, healthy climate plans.
- 2 Scale up finance for vulnerable countries to tackle the climate and health crises.** Rebuild trust in the Paris process by delivering on the USD 100 billion/year climate finance goal.
- 3 Step up support for adaptation and resilience.** Operationalise the global goal on adaptation.
- 4 Increase action on loss and damage.** Address the loss of life and damage to health that vulnerable countries and communities are facing.
- 5 Finalise the Paris Agreement Rulebook.** Operationalise the most powerful global agreement to protect people and planet.

1) Close the 1.5°C gap to stay alive.

The goal of the Paris Agreement - limiting global heating to well below 2 degrees Celsius and pursue efforts to limit temperature increase to 1.5 degrees - is arguably humanity's most important public health goal (48). By COP26, governments are expected to submit ambitious new near-term climate plans in the form of Nationally Determined Contributions (NDCs), as well as net-zero emission commitments.

The global health community urges governments to recognise the fierce urgency of this turning point in time and protect citizens from escalating climate change impacts. NDCs and net-zero commitments represent both near- and long-term policy goals for governments to protect the health of their citizens, while offering immediate and local health benefits (49,50).

In recognition of the science (4), governments should submit "healthy NDCs" that: (i) are in line with the 1.5 degrees temperature goal; (ii) have provisions in place to protect the health and livelihoods of the most vulnerable people, including women, children and other disadvantaged groups (51); and (iii) outline climate interventions with clear health- and social co-benefits (52). For example, NDCs should include stand-alone reduction targets for air pollution and short-lived climate pollutants, such as methane, which would bring considerable climate and health benefits (53).

Governments should also set net-zero greenhouse gas emission targets that are in line with health goals that: are as close to absolute zero as possible, are reached as soon as possible, build in near-term action to halve their greenhouse gas emissions by 2030, and ensure integrity and accountability. For high-income nations, net-zero carbon emissions should be reached by 2040 at the latest.

2) Scale up finance for vulnerable countries to tackle the climate and health crises.

Climate finance is crucial to protect the most vulnerable countries, including from the worsening health impacts of the climate crisis. High-income countries have previously pledged to provide USD 100 billion a year by 2020 (54), however, this target has not been met and threatens to undermine the carefully built-up trust in the Paris Agreement process (55).

Governments from high-income countries can restore this trust by delivering on the USD 100 billion/year goal for vulnerable countries before COP26, thereby replenishing the funds of the UNFCCC's financial mechanisms, such as the Green Climate Fund, Adaptation Fund, Global Environment Facility, and the Least Developed Countries Fund. At least half of financial contributions should go to adaptation efforts, and this should largely be in the form of grants, not loans. The majority of countries have identified the health sector as a priority for climate action. Therefore, efforts should be made to close the existing gap in health financing and capacity building.

Governments at COP26 should also agree on a clear roadmap for a new, higher finance goal by 2025, as was agreed at COP21 (54). This should include a mechanism to ensure the transparent tracking of finance, the identification of barriers and bottlenecks to accessing climate finance, and capacity-building and technical support for vulnerable countries.

3) Step up support for adaptation and resilience.

Parallel to reducing emissions, adaptation efforts are needed to reduce vulnerability to climate impacts, build resilience, and allow for equitable and sustainable development. Adaptation is a

crucial pillar of the Paris Agreement and governments agreed to establish a global goal on adaptation (56). Climate adaptation is now embedded in policy and planning in most countries, to varying extents (57). A recent WHO survey, however, highlighted that only slightly more than half of all countries have a national climate change plan or strategy in place for health (22).

At COP26, governments should agree on the implementation of the global goal on adaptation and develop methods to measure progress and ensure the necessary finance, including for health adaptation. Health adaptation and resilience need to be considered in all planning, implementation, communication, and transparency processes of the adaptation goal, and should be part of the global stocktake process.

4) Increase action on loss and damage.

The losses and damages from climate impacts are already an existential threat today, and this is particularly the case for the loss of life and damage to health, wellbeing and livelihoods that many vulnerable countries and communities are experiencing.

At COP26, governments need to recognise and address the reality that vulnerable countries and communities are facing. They need to operationalise the Santiago Network on Loss and Damage, established at COP25, so it can provide the technical assistance countries need to cope with unavoidable climate damages. Moreover, the loss of life and the degradation of health from climate impacts should be an important consideration throughout climate negotiations on loss and damage, including in the Task Force on Non-economic Losses, the Task Force on Displacement and the workstream on action and support, as well as the operationalization of COP25 guidance to the Green Climate Fund on providing financial resources for activities relevant to averting, minimising, and addressing loss and damage (58).

5) Finalise the Paris Agreement Rulebook.

COP26 is the deadline for the Paris Agreement to be operationalised, after which all implementation guidelines of the “Paris Rulebook” need to be in place (59). To ensure an ambitious climate regime that can deliver on the Paris goals and safeguard health, governments will need to agree on carbon market mechanisms (article 6 of the Paris Agreement), secure common timeframes for countries’ emissions-reduction targets (article 4.10), and lay the foundations for the first global stocktake in 2023 (article 14).

Governments can operationalise the most powerful global agreement to protect people and planet by adopting the necessary rules to ensure an ambitious, transparent climate regime that leaves no one behind. The rules and regulations of the Paris Agreement carbon

market mechanism should: (i) ensure that a portion of the proceeds from carbon markets are allocated to adaptation finance, (ii) ensure that human rights and the rights of Indigenous peoples and local communities are protected, and that social, health, and environmental safeguards are in place, and (iii) ensure that carbon trading will go beyond offsetting emissions and instead lead to deeper emission cuts. Rules on common timeframes should ensure that the timeframe of national climate commitments - in the form of NDCs - does not lock in low ambition for extended periods of time, but rather aligns with the five-year ambition cycle of the Paris Agreement. Lastly, the rules and mechanism for the global stocktake should ensure transparency in assessing the collective progress towards the Paris Agreement goals, track how climate change is affecting our health, report on the needs and support provided for the health sector, and make clear recommendations on how ambition can be improved.

Resources

COP26 Health Programme

The [COP26 Health Programme](#) has been established to bring stronger health focus and ambition to COP26. Among its activities there are two initiatives where countries can state their ambition to develop climate-resilient sustainable health systems.

The 5 key health priorities for COP26 include:

1. Building climate-resilient health systems.
2. Developing low carbon sustainable health systems.
3. Adaptation Research for Health.
4. The inclusion of health priorities in Nationally Determined Contributions.
5. Raising the voice of health professionals as advocates for stronger ambition on climate change.

- The [WHO Health and Climate Change Global Survey](#) monitors the progress governments are making in protecting and promoting health in response to climate change. The survey allows governments to assess the implementation of climate and health policies and plans, identify gaps in evidence, and better understand the barriers to achieving health adaptation and mitigation priorities.
- The [Healthy NDCs Scorecards](#) by the Global Climate and Health Alliance (GCHA) evaluates new NDCs on their ambition and inclusion of health considerations. It highlights how many NDCs have integrated health into their mitigation and adaptation commitments and recommends areas of improvement for others.

- Health groups in the [United Kingdom of Great Britain and Northern Ireland](#), [European Union](#), [Chile](#), [South Africa](#) and [worldwide](#) have called on their governments to commit to healthy NDCs, highlighting entry points for increased ambition and the inclusion of health goals in the countries' climate policies.
- WHO provides a series of [recommendations for health-promoting NDCs](#) in a 2019 review of NDCs, including for health impacts, health adaptation, health co-benefits of mitigation and finance for climate and health.
- The [Lancet Countdown initiative](#) tracks the connections between public health and climate change using a wide range of indicators.
- Researchers at the University of Wisconsin have outlined the [health and equity benefits of potential climate policies in the United States](#) across a variety of sectors.
- The [Climate Ambition Alliance](#) brings together countries, businesses, investors, cities, and regions who are working towards achieving net-zero CO₂ emissions by 2050 and accelerating the transition toward the Paris Agreement goals. The alliance gathers support through the '[Race to Zero' campaign](#).
- The [Global Commission on Adaptation](#) released a flagship report making the case for climate adaptation and providing specific insights and recommendations for key sectors, including health.

Case Studies

- **Quantifying the health benefits from reduced air pollution in Colombia's NDC.** In its new NDC, the Government of Colombia committed to reducing its emissions of greenhouse gases and short-lived climate pollutants, including black carbon. This will result in improved air quality for its citizens. In partnership with WHO and the Stockholm Environment Institute, the government is conducting a study to quantify the health co-benefits associated with implementing its climate commitments. [Learn more here.](#)
- **Developing 'Healthy NDCs' in Nigeria and Rwanda.** The governments of Nigeria and Rwanda are assessing the significant health and economic gains they will attain by committing to more ambitious climate actions under their NDC, including by transitioning to cleaner and safer forms of energy in homes. Findings are detailed in a series of landmark studies. [Learn more here.](#)
- **Health co-benefits from NDC implementation in China.** The climate policy efforts of China have the potential to bring large health co-benefits to the country. A recent study on the country's 2016 NDC targets revealed that between 225,000 and 368,000 premature deaths could be avoided in 2050 if NDC targets are achieved. Bolstering the argument for the need for increased ambition, the savings associated with these health co-benefits are greater than the cost of implementing China's national climate policies. [Learn more here.](#)
- **Health stakeholder engagement in the development of South Africa's NDC.** Several South African health organisations have been engaged in the review process of the country's updated NDC. The national health stakeholders provided the government with recommendations on how to ensure its climate policies adhere to health and equity benchmarks. [Learn more here.](#)

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3

Harness the health benefits of climate action.

Prioritise those climate interventions with the largest health, socio-economic and environmental gains.



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The public health benefits from implementing ambitious climate actions far outweigh the costs, while strengthening health resilience and building adaptive capacity protects vulnerable populations from health shocks and promotes social equity (6).

The health co-benefits from climate actions are well evidenced and offer strong arguments for transformative change (15). A large body of evidence now shows that climate action aligned with Paris Agreement targets would save millions of lives due to improvements in air quality, diet, and physical activity, among other benefits (21).

Action Points

Harness the health benefits of climate action.

- 1 Maximise and measure the health co-benefits of climate action at all levels of governance.** Commit to promote, account for, and monitor the health co-benefits from climate interventions and reflect them in decision making.
- 2 Honour everyone's right to health.** Recognise the human right to a safe, clean, healthy, and sustainable environment, and adopt policies and processes that safeguard this right.
- 3 Bolster the science of health and climate change.** Help close knowledge gaps and build capacity to research the health impacts of climate change and the health co-benefits of climate action.

1) Maximise and measure the health co-benefits of climate action at all levels of governance.

Ambitious climate action leads to positive externalities for social and health goals, also known as health co-benefits. The scientific and economic rationale for health co-benefits from climate

adaptation and mitigation action is well established, and ranges from reductions in air pollution (14) to more resilient health services (60), from reduced loss of life from extreme weather events to more active populations, to protected work conditions and increased productivity (61), from preserved cultural practices to strengthened food security (21).

Despite leading to near-term benefits and greater acceptance of necessary changes by stakeholders, the health co-benefits of interventions are rarely quantified or included in decision-making processes or socio-economic valuations (62).

Governments can strengthen the case for ambitious action by committing to measure, monitor and report on the health co-benefits from climate interventions, by incorporating health and social safeguards in policies at all levels of government, and by including estimates of both climate, health, and socio-economic benefits in decision-making processes for national policies, such as NDCs and net-zero commitments.

2) Honour everyone's right to health.

Everyone is harmed by the impacts of climate change to some degree, but these harms fall disproportionately on disadvantaged population groups - including women and girls, Indigenous communities, people in crisis, displaced people, and the poor (63). Similarly, Small Island Developing States and other countries and regions most at risk are bearing the brunt of the climate crisis, despite a negligible contribution to emissions. In order to challenge and reverse growing inequities and ensure no one is left behind, a rights-based approach to tackling the climate crisis is necessary.

Momentum is growing to recognise the human right to health, life, and to a safe, clean, healthy, and sustainable environment. Examples of this can be found in the development of a resolution at the UN Human Rights Council (64), the establishment and implementation of the Declaration on the Rights of Indigenous Peoples (65), and the

growing number of litigation cases around the world (66). Governments should honour everyone's right to health by placing health and equity central to policy making and the measurement of national progress. This can be done by adopting policies that safeguard the right to health, life, and a healthy environment, and ensure a pollution-free and productive environment for current and future generations to thrive.

When health and equity are the guiding principles of governments, priorities for public spending should be determined by the extent to which they can improve population well-being, strengthen resilience and reduce inequalities. National health and equity strategies and commissions should also be in place to redress health and environmental inequalities, while equitable access to health services should be ensured for all.

3) Bolster the science of health and climate change.

The science is clear: the health impacts of inaction on climate are overwhelming, while the health and social benefits of action could facilitate the necessary changes we need to make (4,67). A strong science base exists, detailing how climate change impacts our health, how we can increase the resilience of the most vulnerable,

what are the most effective climate interventions to reach climate and health goals, and how large the health co-benefits are from taking climate action (68,69).

There are a wide range of tools available to assess the health and economic co-benefits from climate policies. These tools allow policy makers to assess health gains from mitigation targets, such as the health gains from reduced air pollution, the health benefits from urban environments with increased walking and cycling, the effect of transport on air pollution, the impact of urban green spaces on health exposures, and much more (70).

However, regional and thematic knowledge gaps remain, and more funding and support is needed to build capacity for research, monitoring, and implementation efforts on health and climate change, especially in under-resourced and at-risk regions. Local and indigenous knowledge systems also play a crucial role in ensuring knowledge is translated into locally-relevant policies and actions. At the same time, governments should ensure their decisions on climate mitigation, adaptation, and health protection are guided by the best available science and practical experiences, are not influenced by misinformation campaigns and other forms of corporate capture, and follow the Precautionary Principle to protect people's health and the climate.

Resources

Achieving health benefits from carbon reductions.

The [Carbon Reduction Benefits on Health calculation tool \(CaRBonH\)](#) allows policy makers to quantify the health and economic consequences achieved through improvements in country-level air quality from domestic carbon reductions. The tool accounts for and monitors the health co-benefits from climate interventions and reflects them in decision making and policies, such as the NDCs. The 2018 version of the tool is tailored to countries from the WHO European Region, while the updated version will be available to countries globally in 2021.

- The [Low Emissions Analysis Platform](#) is a tool that is widely used by governments to assess the health benefits of climate change mitigation actions from reduced air pollution. Over 30 NDCs have used it to assess health benefits.

- The [Climate and Clean Air Coalition \(CCAC\)](#) is a voluntary partnership of governments, intergovernmental organisations, businesses, scientific institutions and civil society organisations working at the nexus of climate and air quality, delivering multiple benefits from the mitigation of short-lived climate pollutants: methane, HFCs, black carbon and tropospheric ozone.
- A report by the UN Special Rapporteur on Human Rights and the Environment shares [best practices in implementing the right to a healthy environment](#). These include access to information, public participation, and access to justice and effective remedies.
- A research GAP report on gaps and trends in research on climate and health, which was developed by the [WHO-civil society working group on climate change and health](#), provides an overview of geographical and topical knowledge gaps on the science around climate change and health.
- The [Pathfinder Initiative](#) is creating a global collection of the policies and technologies that yield multiple benefits for people and planet. The initiative's aim is to show how the implementation of well-designed policies and technologies can yield multiple benefits for both health and environment.

Case Studies

- **Assessing the health benefits of fossil fuel subsidy reform and carbon taxation in Pakistan's NDC.** The government of Pakistan, in collaboration with WHO and global experts, has highlighted the substantial health and economic benefits from raising climate ambition through energy policy interventions and investments. [Learn more here](#).
- **Bangladesh connects the dots between climate, pollution and health.** The government of Bangladesh used a modelling tool known as LEAP-IBC to evaluate the local air quality impacts of adopting policies that mitigate climate change. [Learn more here](#).
- **Monitoring the right to a healthy environment in the Pacific.** Several SIDS - including Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu – have established the Secretariat of the Pacific Regional Environment Programme, which supports Pacific Island states to share environmental and health data, tools, and assessments. This collaborative initiative assures communities their right to a healthy environment is protected and monitored. [Learn more here](#).

Find more case studies on the [WHO website](#).

4

Build health resilience to climate risks.

Build climate-resilient and environmentally sustainable health systems and facilities, and support health adaptation and resilience across sectors.



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As observed during the COVID-19 pandemic, health systems and facilities are at the forefront in protecting people from acute threats, including from the rising health impacts of climate change (71). Although health is recognised as a priority sector vulnerable to climate change impacts (72), billions of people still lack access to the most basic services that are required to protect their health (73).

The climate crisis places stress on the capacity of health systems to prevent, adapt and respond to increased health risks, while at the same time all health systems contribute to the climate crisis through their greenhouse gas emissions. In order to protect the health of populations from the effects of climate change and avoid widening health inequities, countries must build low-carbon, sustainable, climate-resilient health systems and facilities (60).

Action Points

Build health resilience to climate risks.

- 1 Regularly assess health vulnerabilities and adaptation capacities.** Conduct iterative climate change and health vulnerability and adaptation assessments (V&As).
- 2 Develop and implement an evidence-based adaptation plan for health.** Regularly assess health vulnerabilities and adaptation capacities and develop an ambitious Health National Adaptation Plan (HNAP).
- 3 Strengthen the climate resilience and environmental sustainability of health systems and facilities.** Improve access to, and affordability of, climate-resilient and environmentally sustainable care while strengthening the capacity of health systems and facilities to protect and improve the health of all people in an unstable and changing climate.

4 Close the financing gap for health adaptation and resilience. Invest in health adaptation and resilience and help close the health financing gap.

5 Protect health and advance climate justice by implementing health-promoting interventions in other sectors. Develop synergies between health, climate change, and other development goals by investing in health-determining sectors, such as water, energy, and food and agriculture.

I) Regularly assess health vulnerabilities and adaptation capacities.

In order to adequately respond to the impacts that climate change has on the health of people and the operations of health systems, a first critical step for governments is to assess the climate-sensitive health risks they are exposed to, which populations and geographical areas are most vulnerable and disadvantaged, and to what extent health systems are capable of responding to these health risks.

Vulnerability and Adaptation (V&A) assessments thereby provide an important foundation for any government's response to climate risks and provide the evidence base for health adaptation planning that is sensitive to underlying vulnerabilities and inequities. V&As also improve the understanding, provide a baseline for ongoing monitoring of the health impacts of climate change, provide the opportunity for building capacity, help to identify health and gender inequities, and strengthen the case for investment in health protection (74).

Governments should conduct iterative climate change and health V&As, both to safeguard the public health of their populations, as well as the resilience of their health systems and facilities. The evidence gathered through these V&As should inform the development of comprehensive and ambitious health national adaptation plans (HNAPs).

2) Develop and implement an evidence-based adaptation plan for health.

National Adaptation Plans (NAPs) are an official part of the UNFCCC and international climate efforts. They allow countries to identify medium- and long-term adaptation needs and develop and implement strategies and programmes to address those needs. Led by the Ministry of Health, a HNAP sets out a health-specific adaptation plan. In addition to information related to the main health impacts of climate change and adaptation options to address these, a HNAP should offer a strategy to engage other health-determining sectors, such as the water, sanitation, transport, or energy sector, ensure the necessary finance, and help to build the institutional, organisational and technical capacity for the government to effectively build health systems that are more resilient to future health shocks as well as to the impacts of climate change (75).

A comprehensive HNAP should be informed by the evidence gathered in a climate change and health V&A (74). The WHO operational framework for building climate-resilient health systems can be used to ensure plans are comprehensive (76) and quality criteria for HNAPs have been developed building on lessons learned by countries (77).

3) Strengthen the climate resilience and environmental sustainability of health systems and facilities.

Around the world, billions of people still lack access to the most basic services that are required to protect their health, whether from COVID-19, climate change, or any other risk (71). Many regions of the world with the highest vulnerability to climate change are also those with the lowest health care coverage. The most

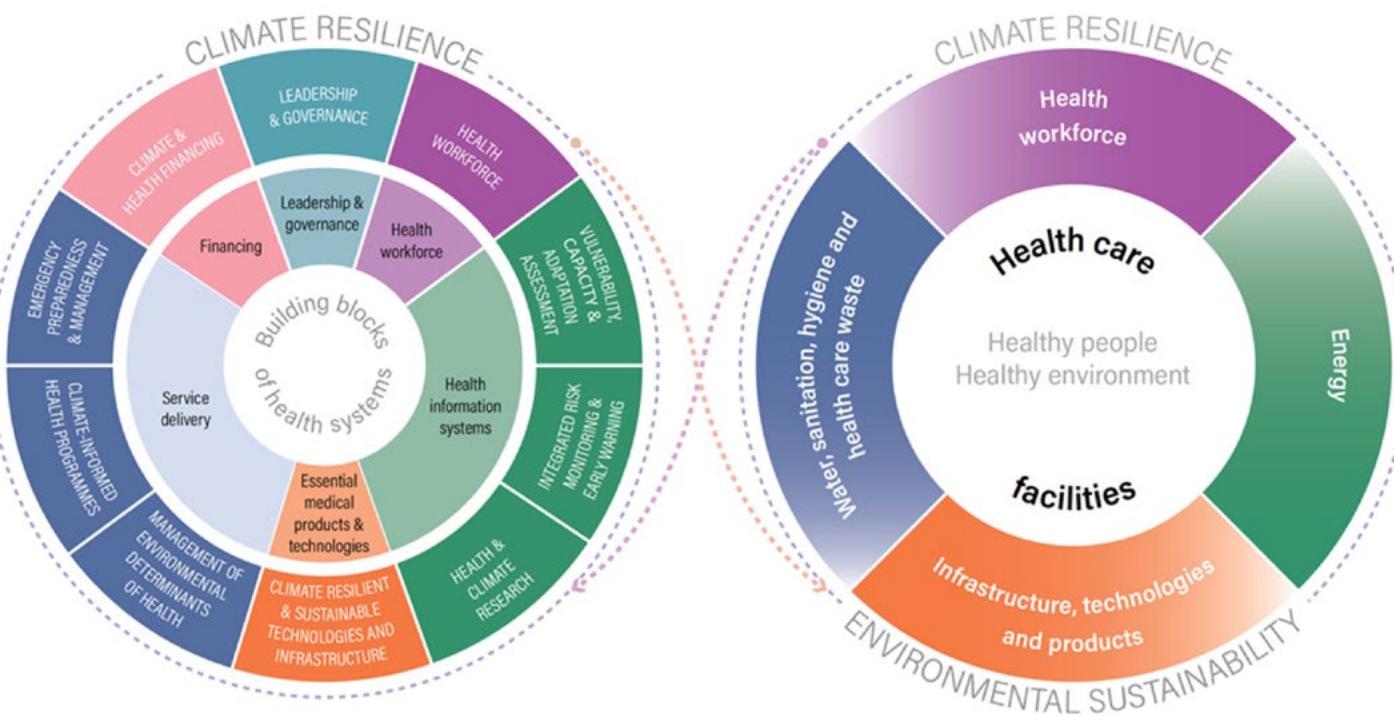
disadvantaged groups in any society are generally also more vulnerable to climate risks (78).

Health systems and health care facilities are our first line of defence against climate-related shocks and stressors and, at the same time, their operations often impact the environment and populations' health with unsustainable practices related to water, sanitation, waste, energy use, and procurement and supply chains. Climate-resilient and environmentally sustainable health care facilities contribute to a high quality of care and accessibility of services, and by helping reduce facility costs also ensure better affordability. They are, therefore, an important component of universal health coverage (UHC) (79,80).

Governments should commit to increase access, affordability, and sustainability of essential health services, and enhance the capacity of the health workforce. This will ensure health systems and facilities are able to protect and improve the health of all people in an unstable and changing climate. High-income countries should support low-income and vulnerable countries in providing climate-resilient and environmentally sustainable healthcare.

Policy makers can achieve both climate resilience and environmentally sustainable health care in tandem by implementing actions around 10 key components, summarised in the WHO operational framework for building climate-resilient health systems. Focused interventions aiming to strengthen both the climate resilience and environmental sustainability of health care facilities should also address (i) energy, (ii) the health workforce, (iii) infrastructure, technologies and products, and (iv) water, sanitation, hygiene and healthcare waste (Figure 2).

Global, regional, and national monitoring systems should be strengthened so that progress towards the climate resilience and environmental sustainability of health systems and facilities can be assessed and evidence-based assessment can inform the need for targeted investments and interventions.

Figure 2**Functions to strengthen the climate resilience and environmental sustainability of health systems and facilities (60).**

4) Close the financing gap for health adaptation and resilience.

Health is the sector where demands for climate support are most frequently left unmet. Whereas approximately two-thirds of Nationally Determined Contributions to the Paris Agreement cite the importance of health (49), and 50% of countries have developed strategies on climate change and health (22), a much lower proportion of countries have health adaptation plans in place, and less than 0.5% of multilateral climate finance is allocated to health projects (6).

Finance for health adaptation and resilience is a no-regrets investment that ensures the sustainable development of economies while protecting vulnerable populations (81). Governments should help close the health financing gap by allocating 50% of their climate finance to adaptation and removing existing barriers to finance for health adaptation and resilience.

5) Protect health and advance climate justice by implementing health-promoting interventions in other sectors.

Human health is largely determined by sectors beyond the immediate control of the health sector, such as through the water, sanitation and hygiene (WASH) sector, energy, food and agriculture, environment, transportation, housing, as well as through gender norms, roles and relations, and other social determinants of health. Health resilience can therefore only be achieved through coordinated and integrated policies across sectors and policy areas. Without a holistic and systemic approach to tackling growing health inequities across society, it will be impossible to achieve the SDGs.

Governments can improve both health resilience and multiple SDGs by investing in health-determining sectors (for example by developing

climate-resilient sanitation and water safety plans), by prioritising the achievement of Universal Health Coverage and healthy lives and well-being (SDG3) as an overarching policy goal,

by ensuring coordination across sectors and by monitoring synergies and trade-offs from actions in health-determining sectors (82).

Resources

The COP26 Presidency Initiative on Climate-Resilient Health Systems

An [initiative on climate-resilient health systems](#) was developed as part of the COP26 Health Programme. The initiative aims to increase the resilience of health systems globally and consists of an extensive technical support package for countries, which was developed by WHO in collaboration with multiple partners.

- The [Compendium](#) is a global repository of interventions for improving health by creating healthier environments. It contains a comprehensive collection of over 500 actions and is based on WHO and other UN guidance. It covers a broad range of areas such as air pollution, water, sanitation and hygiene, climate change, chemicals, radiation, and food systems.
- The [WHO toolkit on climate change and health](#) contains a wide variety of technical guidance and support tools for countries to increase the resilience of their health system, including support on vulnerability and adaptation assessments, early-warning systems, building resilient health systems and facilities, and national adaptation planning.
- The [Risk-Informed Early Action Partnership](#) brings together a wide range of stakeholders with the aim of making 1 billion people safer from disaster by 2025.
- The [WHO guide for climate-resilient water safety plans](#) allows policy makers and planners to manage the health risks associated with climate change in the water, sanitation and hygiene sector.
- The [ClimApp](#) is a mobile phone app that translates climate services into personalised adaptation strategies to cope with heat and cold stress. The App predicts heat and cold stress and provides personalised health risk warnings and advice for individuals, governments and companies, supporting decision-making for adaptation strategies.

Case Studies

- **Building climate-resilient health systems in Lao People's Democratic Republic and Cambodia.** In Cambodia and Lao People's Democratic Republic, the impacts of climate change are increasingly posing risks to people's health and straining the countries' health systems. Since 2019, both countries have been piloting a project to help increase the resilience and capacity of their health systems to respond to these climate-sensitive health risks. [Learn more here.](#)
- **Improving health surveillance in Ethiopia.** A project implemented in Ethiopia aimed at enhancing the capacity of the country's health surveillance and early warning systems in order to ensure the health system is resilient and prepared to respond to a range of climate sensitive diseases. [Learn more here.](#)
- **Strengthening health resilience in Sao Tome and Principe.** The government of the island nation Sao Tome and Principe adopted a multisectoral, all-of-government approach to strengthen its health resilience against climate change impacts. It implemented a range of measures, from training and awareness raising, to the construction of new facilities and infrastructure, the establishment of information sources, and the acquisition of materials and equipment needed for addressing climate emergencies. [Learn more here.](#)
- **Climate-resilient and environmentally sustainable health care facilities in Fiji.** The government of Fiji has launched national guidelines to ensure the country's health care facilities are resilient to climate shocks and stresses, while at the same time being environmentally sustainable. Fiji's efforts in the health care sector complement its track record of leadership on climate action. [Learn more here.](#)
- **Protecting workers from extreme heat in Nicaragua.** Sugarcane farmers, and other agricultural workers in Nicaragua, are increasingly exposed to extreme heat, which can lead to serious illnesses, such as chronic kidney disease, and a loss of productivity. The Adelante Initiative was set up to provide scientific evidence of workplace interventions that can protect these workers, such as by providing adequate water, rest and shade. The initiative hopes to inform other at-risk industries on how to keep workers safe from extreme weather. [Learn more here.](#)
- **Understanding the dangers extreme heat on maternal and neonatal health in Africa.** A research consortium on climate, heat, and maternal and neonatal health in Africa, bringing together partners from three continents, aims to help close the research gaps on the impact of heat exposure on maternal and neonatal health in sub-Saharan Africa. [Learn more here.](#)

Find more case studies on the [WHO website](#).

5

Create energy systems that protect and improve climate and health.

Guide a just and inclusive transition to renewable energy to save lives from air pollution, particularly from coal combustion. End energy poverty in households and health care facilities.



Over 90% of people breathe unhealthy levels of outdoor air pollution, largely resulting from the burning of the same fossil fuels that are driving climate change (83). Phasing out fossil fuels drastically reduces pollution and offers immediate and local benefits for society and the economy. Even though achieving clean air will require ambitious action across many sectors, such as transport, industry, agriculture, waste management, and land use, the energy sector is the largest emitter of greenhouse gasses and air pollutants (84). Therefore, tackling air pollution is one of the crucial ways in which energy systems can improve and protect health.

The technologies and policies that are needed to protect both climate and health from unhealthy energy generation and use already exist. When done well, the rapid transition to clean, renewable energy, such as solar, wind, geothermal and wave energy, can also strengthen resilience, create jobs, reduce energy poverty, and fulfil a growing need for energy in developing economies (85,86).

Action Points

Create energy systems that protect and improve climate and health.

- 1 Phase out polluting fossil fuels.** Avoid environmental, health and economic damage by delivering sustainable energy for all.
- 2 Let us breathe clean air.** Adopt WHO air quality guidelines and tackle air pollution.
- 3 Invest in clean solutions for household energy.** Bring clean heating, lighting, and cooking solutions to the billions of people who currently lack them.
- 4 Power the health sector with clean energy.** Ensure all health systems and facilities have access to renewable energy.
- 5 Ensure a just transition for workers and communities.** Provide support, training, and opportunities for those transitioning out of the fossil fuel sector and ensure occupational health and social safeguards for workers in the clean energy sector.

1) Phase out polluting fossil fuels.

The combustion of fossil fuels causes large environmental, health, and economic damage, and is a major contributor to air pollution, which kills 7 million people every year(87). This air pollution includes short-lived climate pollutants (SLCPs), such as black carbon, methane, and ground-level ozone, which also threaten human health. The science is unequivocal that the burning of fossil fuels leads to air pollution deaths (88,89).

Governments need to end all support for fossil fuel energy, both domestically and abroad, in line with the long-term objectives of the Paris Agreement and best available science (90). This should include an absolute end to fossil fuel subsidies by 2025 and the complete phase out of coal - the most polluting and harmful of fossil fuels - by 2030 in OECD countries at the very latest, and by 2040 in non-OECD countries. At the same time governments should significantly increase investments in energy efficiency and renewable energy, ensuring an inclusive and just transition (91,92). In addition to a rapid phase out of fossil fuel subsidies, effective taxation is needed. Pricing the negative health and economic externalities from burning fossil fuels can help ensure the transition to an energy system that protects and improves climate and health.

2) Let us breathe clean air.

WHO data shows that 9 out of 10 people breathe outdoor air that exceeds the WHO guideline limits for air pollutants. Air pollution particularly increases morbidity and mortality from the noncommunicable cardiovascular and respiratory diseases that are the major causes of global mortality; it also increases the disease burden from lower respiratory tract infections and increases preterm birth and other causes of death in children and infants, which remain a major cause of the disease burden in low- and middle-income countries (93).

Governments should prioritise clean air, including by switching to clean energy sources, by promoting more sustainable and efficient energy uses and policies, stimulating electrification, and by implementing interventions across different sectors. They should adopt measures to achieve the WHO Air Quality Guidelines, monitor air quality levels, measure and report the health gains from air pollution reductions, ensure the adoption of legal air quality targets and delivery frameworks, hold the private sector accountable, and include air quality targets in their energy policies.

3) Invest in clean solutions for household energy.

Around one third of the global population - 2.6 billion people - are exposed to harmful levels of household air pollution due to the lack of access to clean cooking solutions, causing millions of deaths annually (94). The prime source of household pollution is from the use of inefficient stoves fuelled with wood, biomass, animal waste, charcoal, kerosene and coal for household cooking, heating, and lighting (95). Such inefficient use of fuels in residential settings is estimated to be responsible for up to 50% of black carbon emissions globally, illustrating the important and short-term benefits that accelerating access to clean cooking can have for both health and climate (96).

Governments should fast-track the transition to clean cooking and heating fuels and technologies and help reliably electrify households while expanding renewable energy. Improving the energy efficiency and insulation of homes and buildings will also help reduce consumption, reduce energy poverty, and improve health outcomes. The clear benefits to climate, health, gender equity, and the economy will largely favour peri-urban, rural, and marginalised communities, and women and children, making these policies an important element of equitable climate solutions.

4) Power the health sector with clean energy.

On the one hand, thousands of health centres across low- and middle-income countries are not connected to the grid and lack electricity (97), while, on the other hand, the global health care climate footprint makes up nearly 5% of greenhouse gas emissions (98,99). These two issues can be tackled simultaneously by supporting health systems to have a reliable source of power with 100% clean, renewable electricity.

Governments in low- and middle-income countries can reduce energy poverty, improve access to health care, and strengthen resilience by prioritising the roll-out of renewable energy across their health system. In combination with the provision of other essential services, such as water, sanitation and hygiene, this would help provide health care to the millions of people who are currently still served by health care facilities with no access to electricity, while leapfrogging to clean energy sources (94).

5) Ensure a just transition for workers and communities.

Renewables provided close to 12 million jobs worldwide in 2019, and the development of renewable energy supports governments in achieving the double goal of reducing emissions while offering social and economic benefits (86). Scaling up renewables is also crucial in ensuring a green and healthy recovery from COVID-19 (71).

To ensure the expansion of renewable energy is sustainable and benefits local livelihoods, policy makers need to put in place social, environmental, and equity safeguards for the sector. At the same time, workers, communities, and regions who are transitioning away from polluting sectors should be offered support, training, and opportunities to transition to more sustainable sectors (100). To ensure that just transition measures effectively improve people's health, transition planning should go hand-in-hand with health impact assessments. Lastly, fossil fuel companies and operators have a duty for remedial action to clean up and, to the extent possible, undo the harmful impacts of the pollution they caused (101).

WHO Global Air Quality Guidelines

In 2021, WHO published the updated global Air Quality Guidelines, providing recommendations on air quality guideline levels as well as interim targets for six key air pollutants - particulate matter, ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide. In addition, good practice statements are included.

The new guidelines provide clear evidence of the damage that air pollution inflicts on human health, at even lower concentrations than previously understood. The guidelines identify the levels of air quality necessary to protect public health worldwide, and serve as a reference for assessing if, and by how much, the exposure of a population exceeds levels at which it causes health concerns.

Achieving the recommended air quality guideline levels will deliver substantial health benefits globally. For example, around 80% of premature deaths attributed to PM_{2.5} exposure in the world could be avoided if countries attain the annual guideline levels for PM_{2.5}.

Guideline levels for specified pollutants can be used as an evidence-informed reference to help decision-makers in setting legally binding standards, and are a useful instrument with which to design effective measures to achieve pollutant emission and concentration reductions, and therefore, to protect human health (93).

Pollutant	Averaging time	2005 AQG level	2021 AQG level
PM _{2.5} , µg/m ³	Annual	10	5
	24-hour ^a	25	15
PM ₁₀ , µg/m ³	Annual	20	15
	24-hour ^a	50	45
O ₃ , µg/m ³	Peak season ^b	-	60
	8-hour ^a	100	100
NO ₂ , µg/m ³	Annual	40	10
	24-hour ^a	-	25
SO ₂ , µg/m ³	24-hour ^a	20	40
CO, mg/m ³	24-hour ^a	-	4

µg = microgram, PM_{2.5} = fine particulate matter, PM₁₀ = particulate matter, O₃ = ozone, NO₂ = nitrogen dioxide, SO₂ = sulphur dioxide, CO = carbon monoxide, AQG = Air Quality Guideline.

^a 99th percentile (i.e. 3–4 exceedance days per year).

^b Average of daily maximum 8-hour mean O₃ concentration in the six consecutive months with the highest six-month running-average O₃ concentration.

Note: Annual and peak season is long-term exposure, while 24 hour and 8 hour is short-term exposure.

Resources

The Health and Energy Platform of Action

The global [Health and Energy Platform of Action](#) (HEPA) aims to ensure universal access to clean and sustainable energy to protect health. The initiative has a strong focus on clean cooking solutions and the electrification of health care facilities and supports the development of global and country implementation roadmaps for its priority areas of action.

- The [Energy Progress Report](#) offers a global snapshot on energy access, energy efficiency, renewable energy, and international cooperation, and provides an overview of clean energy goals for each country.
- The Clean Household Energy Solutions Toolkit (CHEST) provides information resources and tools for decision-makers to design and implement clean household interventions to protect health and climate. For example, the [WHO Benefits of Action to Reduce Household Air Pollution tool](#) (BAR-HAP) allows users to assess the costs and benefits of interventions to reduce household air pollution.
- The [BreatheLife Campaign](#) brings together a range of proven solutions and best practices to both reduce air pollution and implement mitigation strategies.
- The COP26 initiative on [Low Carbon Sustainable Health Systems](#) provides support to governments and health care institutions to ramp up climate action in health systems and facilities.
- A [Global Road Map for Health Care Decarbonisation](#), developed by Healthcare Without Harm, provides a navigational tool for achieving zero emissions along with climate resilience and health equity. The roadmap offers detailed interventions, fact sheets, and trajectories.
- The Global Green and Healthy Hospitals Network has developed a collection of [Energy Case Studies](#) of health care systems from around the world.
- The [Powering Past Coal Alliance](#) is a coalition of national and sub-national governments, businesses, and organisations advancing the transition from unabated coal power generation to clean energy. They support governments to capitalise on the health co-benefits of reducing coal use.

Case Studies

- **Decarbonising health care facilities in Colombia.** The San Rafael de Pasto hospital in Colombia has been running an ambitious climate program for almost a decade. The hospital's management believes environmental health is crucial for its patients' recovery process and has taken far-reaching steps to lower its environmental footprint. [Learn more here.](#)
- **Net-zero healthcare.** In 2020, the National Health Service England committed to become the world's first net zero national health service. For the emissions it can control directly, the National Health Service aims to reach net zero by 2040, and by 2045 for the emissions it can influence. [Learn more here.](#)
- **The first time air pollution has been listed as a cause of death.** Ella Adoo-Kissi-Debrah, a young girl living in London, died in 2013. An inquest found air pollution was the cause of her death and this was listed on her death certificate. The case reaffirms everyone's right to clean air and could have legal implications to more strongly enforce this right. The Coroner for the case made recommendations for the United Kingdom Government, local authorities, and other public and medical bodies to improve public awareness and information about air pollution. [Learn more here.](#)
- **Clearing the air for households in Kenya.** A project in Kenya is helping to roll out training on household air pollution to community health volunteers. Many Kenyan households still rely on burning wood or biomass for household cooking and heating, leading to dangerous levels of air pollution and contributing to emissions. Health workers can help households make the switch to clean cooking solutions. [Learn more here.](#)
- **Solar-powered health facilities in Cox's Bazar, Bangladesh.** The town of Cox's Bazar in Bangladesh struggles to provide reliable power to its residents and more than 900,000 Rohingya refugees hosted in informal camps and spontaneous settlements. To improve the living and health conditions of the affected population and its environmental footprint, the International Organization for Migration has been harnessing solar energy to power its facilities inside and outside the refugee camps, addressing the urgent health and WASH needs of host communities and refugees. [Learn more here.](#)

Find more case studies on the [WHO website](#).

6

Reimagine urban environments, transport, and mobility.

Promote sustainable, healthy urban design and transport systems, with improved land-use, access to green and blue public space, and priority for walking, cycling and public transport.



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Cities consume over two-thirds of the world's energy, are important centres of transport, housing, and business, and are responsible for over 60% of greenhouse gas emissions (102). Transport alone - of which a large part is connected to cities and urban environments - is responsible for 24% of the CO₂ emissions from fuel combustion (103). Supporting the switch to cleaner and more active transport has large environmental, health, and social benefits. The promotion of active travel, such as walking and cycling, along with accessible public transport, improved digital connectivity, and better urban and regional planning can deliver compact cities, well-connected rural areas, and enables access to opportunities, and public spaces (37). Improved urban transport and mobility can also help protect people from the risk posed by COVID-19 while supporting economic recovery (104).

Action Points

Reimagine urban environments, transport, and mobility.

1 Phase out the internal combustion engine and reduce private car use.

End the sale of petrol and diesel vehicles and support a shift away from private car use.

2 Prioritise walking, cycling and public transport.

Prioritise walking and cycling as healthy low-carbon modes of transport.

3 Create people-centred cities.

Integrate health and equity and nature considerations into urban and transport planning to create compact and future-proof cities.

1) Phase out the internal combustion engine and reduce private car use.

Emissions from transport largely come from road travel – cars, buses, and trucks - and this is increasing (105). To meet the goals of the Paris agreement, there needs to be a rapid global shift away from vehicles powered by an internal combustion engine, such as through bans on new sales of petrol and diesel vehicles by 2030 and bans on their use in highly populated areas, such as city centres, by 2025. Near-term reductions in freight and logistics, maritime shipping, and air travel are also needed. The switch to vehicles with substantially lower emissions, such as electric vehicles, in situations where cars, vans and other transport options are needed, would lead to improved air quality, improved respiratory and cardiovascular health, and reduced noise pollution and road traffic injuries.

Ultimately, however, the use of individual cars needs to fall rapidly to improve both climate, health, and equitable mobility. In the short term, low-emission and car-free zones in towns and cities can help remove the most polluting vehicles from urban centres. A rapid phase out of the internal combustion engine is also needed in public transport systems to ensure equitable access to clean and sustainable transport options for everyone. Governments can play an important role in setting targets and planning for the needed shift away from private car use and towards increased use of clean public and non-motorised transport options.

2) Prioritise walking, cycling and public transport.

Walking causes no emissions and is a form of transport available to nearly all. Emissions related to cycling can be more than 30 times lower for each trip than driving a car powered by fossil fuels, and about ten times lower than driving an electric car, when comparing the life cycle of each travel mode (106). Both walking and cycling have major health benefits, such as reducing the risk of many chronic health

conditions and improving mental health and wellbeing (107). Accessible, affordable, and clean public transportation can make mobility more inclusive.

Governments should shift their investment priorities and secure large investments to bridge the historical investment gap for walking, cycling and public transport. High walkability should be paired with increased safety and accessible, affordable, and clean public transportation to meet the needs of people with mobility challenges and increase transportation options and access to public space for all.

3) Create people-centred cities.

By 2050, close to two thirds of the world population will be living in urban areas (108). Cities with a strong focus on public transport, access to blue and green spaces, and high walkability will

be more accessible, provide more equal access to goods and services, and provide a healthier living environment (109). Examples of compact cities, such as the 15-min city, Superblocks, and the car-free city, have proven to prevent diseases and promote health, improve social wellbeing, while also addressing climate change and environmental degradation. They have also been demonstrated to support higher urban resilience to the effects of public health measures, such as lockdowns.

To ensure cities are future-proof, governments should integrate health, equity, and nature considerations into urban and regional planning policies and interventions, including in economic impact and cost-benefit assessments. They should promote land-use policies and interventions that deliver diverse, compact, green, and well-connected cities, and secure sustained funding and resources for delivering on healthy urban environments for both humans and nature.

Resources

Sourcebook to integrate health in urban and territorial planning

WHO and its partners have developed a sourcebook for urban planners, city managers, health professionals, and practitioners to [integrate health in urban and territorial planning](#). Along with a second sourcebook on [improving urban transport and health in developing cities](#), these resources show how an integrated approach to health can influence decisions in sectors, such as housing, transport, energy, and water and sanitation.

- The [Health Economic Assessment Tool for walking and cycling](#) (HEAT) calculates the health benefits and economic impact of increased proportions of urban walking and cycling.
- The [Integrated Sustainable Transport and Health Assessment tool](#) (iSThAT) calculates the air pollution emissions from bus, car, and motorcycle traffic, as well as the health and economic impacts these cause.
- A [global action plan on physical activity 2018–2030](#) sets out an ambitious vision for a more active world, and the policy changes that are needed to achieve it.
- The [Pan-European Master Plan for Cycling Promotion](#) offers a blueprint to promote cycling as a climate-friendly zero-emission healthy and sustainable active form of mobility all over Europe. The [Cycling Cities campaign](#) calls on governments to invest in cycling as a critical public health, access, and climate solution.
- The [WHO Healthy Cities network](#) is a global movement working to put health high on the social, economic and political agenda of city governments.

Case Studies

- **The 15-minute city.** The hyper-connected '15-minute city' is already becoming the new normal in several major cities. The city network C40 has set out a City Agenda for a Green and Just Recovery, outlining the necessary steps to make this a reality in cities around the world. [Learn more here.](#)
- **The world's first zero-emission ambulance.** The National Health Service England aims to deliver the world's first zero-emission ambulance by 2022, and transition their fleet by 2032, showing the transition to cleaner forms of transport is possible for any type of vehicle. [Learn more here.](#)
- **The multiple benefits of cycling.** In the Netherlands, a country known for its promotion of cycling as a mode of transport, the health and economic benefits of Dutch active transport policies have been estimated to prevent around 6,500 deaths each year, and increase average life expectancy by 6 months. [Learn more here.](#)
- **Urban Health in Ghana.** The city of Accra in Ghana has joined the Urban Health Initiative to help transform itself to a more liveable city with cleaner air, and it is piloting tools and approaches other cities will be able to emulate. [Learn more here.](#)
- **The health benefits of open streets in Latin America.** Open streets are increasing the public space to support social distancing while allowing increased physical activity, active transport, and reducing health risks, such as air pollution emissions and road traffic injuries, among others. [Learn more here.](#)

Find more case studies on the [WHO website](#).

7

Protect and restore nature as the foundation of our health.

Protect and restore nature as the foundation for healthy lives and livelihoods.



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Healthy human societies are dependent upon biodiversity and healthy ecosystems - as the source of clean air, water, healthy soils, shelter, medicines, food, pollination and for the regulation of pests, disease, climate and extreme weather events. Human pressures, from land and sea use change such as deforestation, over-exploitation of resources, pollution, intensive and unsustainable agricultural practices, to unsafe management, trade and consumption of livestock and wildlife, and invasive alien species all undermine these services (110).

Nature-based solutions have the potential to provide over one third of the CO₂ emissions reductions needed by 2030 to meet the goal of keeping climate warming to 1.5°C, while they can maximize gains for health and well-being, particularly for the most vulnerable and disadvantaged populations (111). Communities that have traditionally been custodians of lands and waters, such as Indigenous communities, are well-placed to help protect and restore ecosystems as the foundations for healthy lives and livelihoods.

Action Points

Protect and restore nature as the foundation of our health.

- 1 End our destruction of nature.** Halt the destruction and degradation of biodiversity and carbon-rich ecosystems as soon as possible.
- 2 Protect and restore the ecosystems we all depend on.** Commit to protecting at least 30% of the land and sea by 2030, prioritizing areas of high importance for biodiversity and the delivery of ecosystem services.
- 3 Recognise the interconnections between human, animal and ecosystem health.** Integrate a One Health approach to ensure prevention and early detection of health risks.

4 Promote nature-based solutions and a nature-based recovery. Avoid additional harm to nature and build forward better from the pandemic through nature-based solutions that jointly support biodiversity, health, and climate action.

5 Protect people and planet by implementing new global biodiversity framework. Commit to reversing biodiversity loss by 2030 and develop ambitious plans and programmes to support an ambitious post-2020 global biodiversity framework.

1) End our destruction of nature.

Increasing energy consumption, overexploitation of natural resources and unprecedented transformation of land-uses, freshwater and seascapes have led to changes in climate and the accelerating decline of biological diversity worldwide (112). The increasing destruction and degradation of biodiversity and carbon-rich and ecosystems is negatively impacting lives and livelihoods.

To end our destruction of nature, governments should avoid any further biodiversity and ecosystem loss or degradation. Important first steps to achieve this goal are: to reduce deforestation and any further degradation of forests, non-forest terrestrial ecosystems, and coastal ecosystems, to support Indigenous peoples and local communities to maintain or regain stewardship of their traditional lands and waters, and to implement ambitious National Biodiversity Strategies and Action Plans (NBSAPs) as part of commitments under the Convention on Biological Diversity (CBD). Incentives that are harmful to biodiversity, such as perverse subsidies, should be eliminated or reformed (71).

2) Protect and restore the ecosystems we all depend on.

Protecting biodiversity and limiting climate change are mutually supporting goals and can often be addressed together. Actions to protect, sustainably manage and restore natural and modified ecosystems can bring many co-benefits for health, biodiversity and climate goals(113). Thriving ecosystems are essential to human health, and the widespread destruction of nature, including habitats and species, is reducing access to water, clean air, hindering food and nutrition security and increasing the risk of disease emergence (114). Many Indigenous peoples and local communities have acted as knowledgeable keepers of land- and seascapes and are crucial leaders in biodiversity protection.

Jointly achieving climate and biodiversity goals is therefore essential for sustainably and equitably providing benefits to people. Governments can protect and restore carbon-rich and biodiverse ecosystems in many ways, such as through the promotion of sustainable agricultural practices, the protection of Indigenous rights, urban greening, sustainable ocean management,rewilding and other ecosystem restoration efforts. Governments should commit to protecting and restoring at least 30% of the land and sea by 2030 (115).

3) Recognise the interconnections between human, animal and ecosystem health.

Healthy communities rely on well-functioning ecosystems. They provide clean air, fresh water, medicines and food security, help to limit disease and stabilize the climate. But biodiversity loss is happening at an unprecedented rate, impacting human health worldwide and increasing the risk of infectious diseases (116,117). Climate change can amplify these threats.

One Health or other integrated approaches to health must jointly address all dimensions of health, including the health of people, animals,

plants and their shared environment, through a whole-of-government, whole-of-society approach. To improve the prevention and early detection of health risks from biodiversity loss, governments should mainstream a ‘One Health’ approach across all policies that address health and environmental sustainability (118).

4) Promote nature-based solutions and a nature-based recovery.

Overall, COVID-19 stimulus packages have had more harmful than beneficial effects on the environment, even though over half (55%) of global Gross Domestic Product (GDP) depends on healthy ecosystems (119,120). Nature-based solutions that jointly place a value on biodiversity, human health and long-term benefits are essential to maximizing the potential of climate adaptation and mitigation strategies for both people and planet.

Governments plans for a post COVID-19 recovery, including plans to reduce the risk of future epidemics, need to go further upstream than the early detection and control of disease outbreaks (71). Governments can promote nature-based recoveries by minimising stimulus packages that cause additional harm to nature, and by directing at least 10% of the overall recovery investment to protecting and restoring nature. This can help to create new jobs while protecting those for whom the pandemic has hit hardest, such as communities in rural and low-income areas.

5) Protect people and planet through a new global biodiversity framework.

Interconnected climate, nature crises and inequality threaten the health and livelihoods of present and future generations (121). Governments can protect both people and planet by adopting an ambitious global biodiversity framework at the 15th Conference of the Parties (COP15) of the CBD and developing NBSAPs that meaningfully

consider synergies for biodiversity, climate and health. An ambitious global biodiversity framework that is aligned with climate and health objectives is crucial to sustainably support human and societal needs, including clean air, water, food and nutrition security, energy, development of medicines and pharmaceuticals and freshwater, which, together with other services delivered by healthy ecosystems, underpin good health.

In order to protect both people and planet, the post-2020 Global Biodiversity Framework

(GBF) must adopt a roadmap to safeguard and restore nature by 2030. It should be supported by concrete and measurable targets and indicators that also consider the important interlinkages between health and biodiversity, support the 2030 Agenda for Sustainable Development, and be a truly global framework. At COP 15, the CBD will also adopt a global action plan on biodiversity and health which should contribute to supporting the Global Biodiversity Framework and meaningfully foster coordinated science and policy development across the environment, health and other relevant sectors.

Resources

Expert Working Group on Biodiversity, Climate, One Health, and Nature-based Solutions

The [Expert Working Group on Biodiversity, Climate, One Health, and Nature-based Solutions](#), co-hosted by WHO and the International Union for the Conservation of Nature (IUCN), develops guidance and tools for One Health approaches and Nature-based Solutions. This supports decision makers to identify co-benefits and trade-offs for human and ecosystem health, strengthen social and ecological resilience, while supporting a healthy, green, and just recovery from COVID-19.

- The CBD and WHO published a [state of knowledge report on biodiversity and health](#) in 2015, synthesising the interlinkages between both agendas.
- In order to ensure that Nature-based Solutions reach their potential to address societal challenges, IUCN has developed a [Global Standard and quality criteria for Nature-based Solutions](#).
- A new WHO-IUCN [Expert Working Group on Biodiversity, Climate, One Health and Nature-based Solutions](#) guides decision makers toward a healthier, greener, and more sustainable future as they navigate the challenges of the post-COVID-19 era.
- The [GreenUr tool](#) calculates the impact of urban green spaces on health exposure, including cardiovascular disease.
- The [Friends of Ecosystem-based Adaptation](#) network shares experiences and knowledge on harnessing nature and ecosystem restoration when adapting to climate change.
- The [UN Decade on Ecosystem Restoration](#) is a global campaign to protect and restore ecosystems in the next decade.
- The youth-led organisation [Youth4Nature](#) are empowering young people around the world to mobilise around nature and climate goals.

Case Studies

- **An international agreement to protect the world's largest rainforest.** In September of 2021, the IUCN Congress approved a motion to protect 80% of the Amazon rainforest and restore at least half of its degraded forests by 2025, while also ensuring indigenous peoples and local communities govern and administer new protected areas that overlap with their territories and recognises their local governance authorities by 2025. [Learn more here.](#)
- **Eight cities rewilding their urban spaces.** Cities across the world - including Singapore, Dublin, Sydney and Barcelona - are working to create open spaces and "rewild" their communities, to combat the global loss of nature while bringing health benefits to communities. [Learn more here.](#)
- **A Planetary Health approach to rainforest conservation in Madagascar.** The Manombo Special Reserve in Madagascar protects the vital habitat for many critically endangered plant and animal species, while also providing medicine and food security to local communities. [Learn more here.](#)
- **Prescribing nature in Canada.** PaRx is Canada's first national, evidence-based nature prescription program, driven by healthcare professionals who want to improve their patients' health by connecting them to nature. A growing body of research suggests that spending time in nature has a wide range of positive effects on human health, from reduced chronic disease to improved mental health, immune function, and birth outcomes. [Learn more here.](#)
- **A nature-positive green recovery in Pakistan.** The government of Pakistan is implementing a "Green Stimulus" plan to recover from COVID-19 while creating jobs and restoring the country's natural ecosystems. [Learn more here.](#)

Find more case studies on the [WHO website](#).



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8

Promote healthy, sustainable, and resilient food systems.

Promote sustainable and resilient food production and more affordable, nutritious diets that deliver on both climate and health outcomes.



Current food systems, and particularly industrial production methods, are driving global trends towards malnutrition in all its forms, climate-damaging environmental impacts, and undermining health and economic development. Global agriculture and food production systems are currently the single largest driver of nature and biodiversity loss, are responsible for about one quarter of global greenhouse gas emissions, and contribute significantly to air pollution. Moreover, diseases caused by either food insecurity, or consumption of unhealthy diets, are now the single largest cause of global ill health, and land use change is the single biggest environmental driver of new disease outbreaks (122). The effects of climate change are likely to make these health risks even worse.

For the health of people, animals, and the planet, there is a need for a rapid transition to sustainable, safe, and healthy diets for all. Currently, our food systems are making us ill with approximately 1 in 5 deaths - 11 million deaths every year - associated with unhealthy diets, as well as an additional 2.7 million deaths each year from zoonoses directly linked to our food systems (123,124). The numbers are staggering: 690 million people are hungry, 2 billion people have micronutrient deficiencies, and there are over 670 million adults with obesity (125).

A food production transformation would require, on average, a more than doubling of the consumption of nutritious foods, while reducing the consumption of unhealthy foods and beverages by more than half. The implementation of just three changes - reducing food waste and loss, improving livestock management, and the adoption of healthy, largely plant-based diets - could reduce the emission of methane, one of the most potent greenhouse gasses, by 65–80 Mt/year over the next few decades (current global anthropogenic methane emissions are approximately 370 Mt/year) (126).

Sustainable food production requires a shift in how we grow, harvest, process, transport, market, consume, and dispose of food, with health and sustainability central to all transformative actions. This includes the vital area of farming, which could be transformed by ending

subsidies harmful to health or the environment, subsidising nature-positive production, and by high-income nations consuming more plant-based diets and cutting food waste.

Action Points

Promote healthy, sustainable, and resilient food systems.

- 1 Nourish our future.** Improve access to diets that are nutritious, sustainable, and affordable.
- 2 Remove harmful agricultural subsidies.** Remove financial and other incentives that support high emission, unhealthy food options and agricultural practices.
- 3 Support a just agricultural transition.** Prioritise a rapid transition away from unsuitable farming practices that damage the environment and risk human health.
- 4 Mainstream biodiversity for nutrition and health.** Mainstream biodiversity interventions in food systems to strengthen resilience, increase food security, improve nutrition, lower emissions, and protect our vital natural resources.

1) Nourish our future.

Access to a healthy, sustainable, and affordable diet is a human right, not a privilege. Currently, sustainable healthy diets are unaffordable or inaccessible for over three billion people (125). A food system transformation which places health and sustainability at its core will have health, environmental, and economic benefits - both nationally and globally. This transformation could prevent approximately 11 million deaths per year globally, or between 19% to 24% of total adult deaths (123,127). It is essential to reduce agricultural emissions, preserve the world's remaining biodiversity, restore degraded land and depleted oceans, and end malnutrition in all its forms.

To make this a reality, governments should adopt sustainable food system policies that ensure the provision and accessibility of nutritious, sustainable, diverse, affordable, and safe food options (128). Policies should place emphasis on overcoming cost barriers to nutritious foods, reducing food inequities, and preventing food loss and waste.

Governments already have many existing policy tools and initiatives at their disposal to drive this change. These include: establishing dietary guidelines with sustainability criteria to guide all policy action; fiscal policy measures such as taxation and subsidies to support healthy dietary patterns; product reformulation to reduce levels of unhealthy fats, sugars, and salt in the food supply; harnessing the potential of public food provisioning and procurement; labelling to inform consumers of products' nutrition and environmental profile; school feeding programmes; nutrition-sensitive agriculture; integrated One Health approaches; supply chain policies; and food waste reduction measures.

2) Remove harmful agricultural subsidies.

Globally, governments provide nearly US\$600 billion in agricultural subsidies every year. However, subsidies and other financial mechanisms often support the production and consumption of commoditised unhealthy and unsustainable food options, such as industrial intensive meat production, palm oil, and sugar (129). These incentives distort the true cost of unhealthy and unsustainable products compared to alternatives that are better for both human health and the environment.

Governments should implement policies that promote sustainable farming practices by removing and repurposing both the financial and non-financial incentives that support and support high emission, unhealthy food options and agricultural practices. By diverting subsidies and other incentives away from unhealthy products and towards sustainable agriculture and diverse and resilient food chains, governments can ensure a growing population has access

to healthy diets at affordable prices and within planetary boundaries.

3) Support a just agricultural transition.

The transition to more nutritious food and an ecologically friendly food system needs to take place in a fair and just way. High-income countries must take the primary responsibility for mitigating the emissions produced by their food systems while supporting low-income countries to ensure climate-resilient and sustainable food systems. Protecting and strengthening the traditional food systems of Indigenous Peoples, local communities, and small- and medium enterprises is also crucial to ensure their sustainability, resilience and efficiency (130).

Governments should support and work with farmers, and those working in the agricultural sector and rural areas, particularly women, to transition to more sustainable agriculture and food systems as global diets change, and to enhance local, traditional, Indigenous and agro-ecological approaches to food production. A just agricultural transition should also improve workers' rights, social protection, and occupational health and safety, which is often compromised due to the nature of the work or the working conditions (131). A just agricultural transition can be facilitated by guaranteeing markets for suitable and healthy products and with the transfer of finance, training and technology to more sustainable practices.

4) Mainstream biodiversity in food systems to strengthen resilience, increase food security, and lower emissions.

Biodiversity is a foundational pillar for food security, nutrition, and dietary quality. By mainstreaming health and biodiversity considerations and interventions, governments can support a transition toward more sustainable food systems and healthy and nutritious diets (122).

Governments can improve food security and lower emissions of food systems by taking ecosystem-based, ‘One Health’ and traditional food system approaches to improving nutrition and protecting biodiversity. Examples of this include: promoting Indigenous crop varieties; adopting integrated pest management practices; improving soil health management; supporting the production and consumption of local foods, including neglected and underutilised species high in nutritional quality; restoring vegetation

in catchments; promoting the sustainable management of fish habitats; improving sustainable post-harvesting methods; making healthy local foods accessible for school-aged children; supporting smallholder farmers and Indigenous communities in the production of biodiverse foods; regulating food marketing and labelling; and incorporating sustainability into national dietary guidelines and preventing food industry influence on such guidelines.

Resources

Guiding principles for sustainable healthy diets

The [guiding principles for sustainable healthy diets](#), developed by the Food and Agriculture Organisation (FAO) and WHO, offer ways in which to promote diets that are healthy and have low environmental impacts. These guiding principles allow governments to leverage the role of food consumption and diets in contributing to the achievement of climate action and other SDGs.

- WHO [guidance on mainstreaming biodiversity for nutrition and health](#) provides governments with a framework for integrating biodiversity in food-based interventions.
- The [EAT-Lancet planetary health commission](#) provides guidelines on how to feed a future population of 10 billion people a healthy diet within planetary boundaries.
- The [Biodiversity for Food and Nutrition Project](#) uses Indigenous food biodiversity as a lens to address malnutrition, farmer livelihood resilience, and sustainability.
- The Committee on World Food Security has developed [Voluntary Guidelines on Food Systems and Nutrition](#), which enable more inclusive and sustainable food systems for healthy diets for all.
- The [G20 Matera declaration on food security, nutrition and food systems](#) offers a call to action on food systems as part of a green recovery from COVID-19.
- The European Environmental Bureau provides [key facts and recommendations to cut emissions from agriculture](#).

Case Studies

- **Dietary guidelines that are good for health and planet.** Canada, Switzerland, Sweden, Qatar, Norway, Brazil, and Germany all include environmental considerations in their national dietary guidelines. [Learn more here.](#)
- **Building food and nutrition resilience in the Philippines.** In response to the COVID-19 pandemic, the Mayor's Office of Quezon City in the Philippines established an inter-departmental task force to strengthen the city's food security efforts. The task force provides emergency aid to citizens, while implementing a food security plan for long-term recovery with expected co-benefits for climate, the environment, and human health. [Learn more here.](#)
- **Food recovery in the United States.** More than one-third of food produced in the United States ends up in the landfill, where it releases methane gas and contributes to climate change. At the same time, 1 in 6 people in the United States experience food insecurity. To address these intersecting issues, the state of California, along with health facilities in the region, are piloting several food waste prevention projects and policies. [Learn more here.](#)
- **Promoting food security and health for Amazon communities.** A support network for traditional and Indigenous communities in Brazil aims to ensure food security, health services, and territorial protection for local communities during the COVID-19 pandemic. Their actions are focused on supporting public services and direct help for communities, including mobile hospital boats, educational campaigns, and on-site distribution of hygiene kits and food, as well as providing support with territorial forest protection and development. [Learn more here.](#)
- **Climate smart agriculture in Kenya.** The Kenyan organisation Sylvia's Basket advocates for improved access to healthy, safe and nutritious food in Africa. Since 2016 they have supported organic and agroecological farming practices in the region, including through the establishment of organic farms, supporting small-scale farmers to establish their own kitchen gardens, and a training program. [Learn more here.](#)

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9

Finance a healthier, fairer, and greener future to save lives.

Transition towards a wellbeing economy.



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Financial decisions made in the coming months and years can either lock in economic development patterns that will do permanent and escalating damage to the ecological systems that sustain all human health and livelihoods, or, if wisely taken, can promote a healthier, fairer, and greener world (71). In recovering from COVID-19, financial reform will be unavoidable. By transitioning towards a wellbeing economy, financial systems would be redirected to prioritise human needs rather than unsustainable economic growth.

Action Points

Finance a healthier, fairer, and greener future to save lives.

- 1 Stop funding pollution.** End harmful subsidies for fossil fuels, both domestically and abroad.
- 2 Close the health financing gap.** Invest in health adaptation and resilience and help close the health financing gap.
- 3 Ensure public finance does no harm.** Prevent investments in unsustainable and polluting activities that threaten communities' health and wellbeing.
- 4 Provide debt relief to vulnerable nations.** Show global solidarity for those most impacted.

1) Stop funding pollution.

Fossil fuels were subsidised by \$5.2 trillion in 2017 - over 6% of global GDP – and estimates for 2020 suggest only 18.0% of COVID-19 recovery spending, and only 2.5% of total spending, is expected to enhance sustainability (132,133).

Evidence shows the elimination of these harmful subsidies would lower global greenhouse gas emissions, reduce air pollution deaths, and allow an increase in social welfare spending (134). To avoid increasingly harmful levels of global heating, plans for an absolute end to direct government support for any coal, oil,

or gas use needs to be put in place by the end of 2021, and the phase-out of coal should be completed by 2030 in OECD countries and by 2040 in non-OECD countries.

Governments should therefore end harmful subsidies and other financial incentives that support the production and consumption of fossil fuels, put a price on carbon, and re-orient funds in favour of clean, renewable energy sources, and social welfare. To ensure an inclusive and just transition, financial and technical support and equity safeguards need to be in place to support the most vulnerable and avoid energy poverty.

2) Close the health financing gap.

Health is acutely underfunded in most regions, and this is especially true when it comes to climate finance. Health is the sector where demands for climate support most frequently are left unmet. Whereas approximately two-thirds of Nationally Determined Contributions to the Paris Agreement cite the importance of health (49), and half of all countries have developed strategies on climate change and health (72), a much lower proportion of countries have health adaptation plans in place, and less than 0.5% of multilateral climate finance is allocated to health projects (6).

Finance for health adaptation and resilience is a no-regrets investment that ensures the sustainable development of economies while protecting vulnerable populations (81). Governments should help close the health financing gap by removing existing barriers to finance for health adaptation and resilience, increasing finance for locally-led climate action, and by reforming and reallocating health-harmful subsidies to health systems strengthening.

3) Ensure public and private finance do no harm.

Even though governments around the world signed onto the Paris Agreement and its goal of making finance flows consistent with a pathway

towards low greenhouse gas emissions and climate-resilient development (135), global banks have invested USD 3.8 trillion in fossil fuels in the last 5 years alone (136).

Governments should systematically prevent investment in unsustainable, maladaptive or polluting activities that threaten communities' health and wellbeing. For example, committing to no new fossil fuel infrastructure while investing in the rapid reduction of methane emissions would be a valuable investment in the future of our people and planet (126) and a rapid end to environmentally- and health-harming subsidies would allow funds to be redirected towards social and health goals. Incorporating health metrics into environmental, social, and governance criteria for sustainable finance is another example of how to avoid harmful investments. Governments' fiscal policies should ensure that public and private finance does no significant harm, promotes public health, and respects climate safety and reflects the real cost of carbon in line with the damage it causes.

4) Provide debt relief to vulnerable nations.

The debt of vulnerable nations has risen to unsustainable levels, largely due to rising global inequities and worsening climate and health impacts. Developing countries currently need an estimated USD 70 billion a year to adapt to climate change (137). Additional to pledging international climate finance, high-income countries must signal solidarity by providing debt relief. Several groupings of climate-vulnerable countries have called for international financial relief in the wake of COVID-19 to include more systemic changes, for example by providing targeted support to climate-vulnerable countries and leveraging green investments (138,139,140).

Climate-vulnerable nations, such as SIDS, are calling on institutions and governments to enhance the accessibility of climate finance and strengthen capacity-building for vulnerable developing countries (28), since currently only 2% of climate finance reaches small island states and only 14% goes to least-developed countries (141).

Resources

Finance for health and climate change

WHO provides technical guidance and support to countries to access international funds that allow for the implementation of health-relevant adaptation and mitigation actions. This includes Readiness funds from the Green Climate Fund, as well as the Global Environment Facility and Adaptation Fund.

- The [WHO Health and Climate Change Survey](#) of governments highlights countries' personal experiences with climate and health finance, both in terms of the progress governments have made, as well as bottlenecks and barriers to finance they experience.
- The [Finance for Biodiversity Initiative](#) gives out Nature Performance Bonds through which countries can have their debt payments reduced and use the savings on environmental interventions.
- The [Adaptation Gap Report](#) by the UN Environment Programme highlights that the financial gap for adaptation is not closing and that it is particularly large for health adaptation.
- The [Glasgow Financial Alliance for Net Zero](#) unites firms and banks to accelerate the transition to net zero emission in the financial system.

Case Studies

- **Phasing out coal financing for community health in Indonesia.** Indonesia plans to stop building new coal-fired plants after 2023 and has announced it will end all new financing for overseas coal projects. Research has shown the country could take more ambitious steps by phasing out many old coal plants sooner, which would lead to huge health benefits. [Learn more here.](#)
- **Increased climate finance pledge by Germany.** Germany announced in June 2021 that it will increase its climate finance pledge from €4 billion per year currently to €6 billion per year by 2025 to support the Paris Agreement. [Learn more here.](#)
- **Supporting Indigenous communities with carbon farming in Australia.** The Aboriginal Carbon Foundation supports carbon farming projects led by Indigenous Rangers and Traditional Owners in Australia and connects communities who supply carbon credits with organisations and corporations seeking to offset their carbon pollution. This carbon trading scheme generates employment for sustainable land and sea management while offsetting the carbon footprint of participating organisations. [Learn more here.](#)
- **Swapping debt for nature in the Seychelles.** The government of the Seychelles and Seychelles' Conservation and Climate Adaptation Trust have conducted the world's first debt-for-nature swap for ocean conservation. The countries debt was restructured in return for developing a Blue Economy and supporting marine protected areas. [Learn more here.](#)

Find more case studies on the [WHO website](#).

10

Listen to the health community and prescribe urgent climate action.

Mobilise and support the health community on climate action.



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Health leaders everywhere have been sounding the alarm on climate change and are already taking steps to protect their communities and health facilities from worsening climate impacts. Increasingly, health care systems and organisations are also leading by example within the health sector, reducing their own emissions and strengthening resilience.

The COP26 Presidency has established a Health Programme (142) that, among other activities, encourages countries to state their ambition to develop climate-resilient, low carbon, sustainable health systems. Governments should also make use of the status of health professionals within communities, and leverage their political, economic, and moral influence to advocate for climate and health, stand in solidarity with the most vulnerable, and ensure a healthy future for today's children and youth (48).

Action Points

Listen to the health community and prescribe urgent climate action.

- 1 Train the health workforce to respond to climate change.** Update health curricula and provide training and support to prepare health workers.
- 2 Take climate action in the health care sector.** Transition to climate-resilient and sustainable health care.
- 3 Enable health professional advocacy on climate change and health.** Support peers and colleagues to effectively communicate on climate change and health.
- 4 Protect the health of future generations.** Support youth and vulnerable populations to protect the health of future generations.

1) Train the health workforce to respond to climate change.

No health system can function without its workforce, and there is an urgent need to invest in health workers for shared dividends in health, jobs, economic opportunity, and equity (143). For health workers to be able to respond to climate change, however, improved and additional training, resources, research, and support programmes are needed.

Health professionals need to be trained and empowered to recognise, anticipate and treat the symptoms of the climate crisis – manifested through shifting disease patterns, rising vulnerabilities, and increasing extreme weather events – as well as understand and respond to the effect of health inequities on vulnerabilities and health risks from climate impacts. With the right training and support programmes, health workers also play an important role in reducing the environmental footprint of health care itself and ensuring health systems are resilient and well-functioning.

Health leaders and policy makers can enable a prepared health workforce by updating health curricula and by providing additional and continued training and support programmes on climate change and health, while improving professional standards to include criteria on climate and health. These programmes should reach the widest range of health professionals across disciplines and specialties.

2) Take climate action in the health care sector. Transition to climate-resilient, low-carbon, sustainable health care.

The health care sector is one of the world's largest employers and makes up close to 10% of global GDP (144). Health leaders therefore have an opportunity to use the ethical, economic, and political influence of the sector to drive the necessary changes to face the climate crisis.

Health care contributes to climate change through unsustainable energy consumption, transport, products and waste, while at the same time health systems are increasingly vulnerable to climate impacts (60).

Health care can lead by example and align with the ambition of the Paris Agreement by becoming climate-resilient and reducing its own climate footprint. It can do so by implementing low-carbon health care delivery and operations, decarbonising its supply chain, and moving toward net zero emissions. At the same time, it can build resilience by preparing its facilities, and the wider health system, for climate impacts and the shifting burden of disease, and support community health and resilience.

High ambition and high emitter countries should set a target date by which to achieve health system net zero emissions – no later than 2050. All governments should deliver a baseline assessment of greenhouse gas emissions of the health system, as well as an action plan or roadmap to develop a sustainable low carbon health system (including supply chains). Roadmaps also need to consider human exposure to air pollution and the role the health sector can play in reducing exposure to air pollution through its activities and actions.

3) Enable health professional advocacy on climate change and health.

Health professionals are trusted communicators and are embedded in local communities, making them powerful advocates for global to local efforts to reduce emissions and protect people from climate change (145). They are ideally placed to communicate the health risks of climate change, and to promote policies that protect public health from climate impacts.

Governments and health leaders can support the health community to effectively engage on climate change and health, including through meaningful involvement of health professionals in climate decision-making - in particular those who represent communities most affected and at risk. Additionally, the health care setting should be used to raise awareness on the health risks posed by climate change, including by providing patient education materials, communication training, action alerts and timely information on environmental developments that influence the health and wellbeing of patients, policy statements, and research digests.

4) Protect the health of future generations.

The life of every child born today will be profoundly affected by climate change (146), and current climate commitments are nowhere near enough to protect our children, grandchildren and future generations (147). Every year, environmental factors take the lives of 1.7 million children under five (148), and one billion children are already at extremely high risk of the impacts of the climate crisis (149).

Governments should invest in children's health for lifelong, intergenerational, and economic benefits. By monitoring how children flourish today, but also how growing inequities and environmental threats from fossil fuel economies are destroying their future, policy makers would have a better sense of the costs and benefits of policies and practices, and the transformational changes needed. By enacting these changes, governments can listen to and partner with young people and other disadvantaged groups by including their voices and skills, for the sake of the planet's sustainable and healthy future.

Resources

Healthy Climate Prescription to COP26

The [Healthy Climate Prescription](#), a letter from the health community worldwide to COP26 national climate negotiators, calls for effective action to limit warming to 1.5C, increased financing from high-income countries to support low-income countries' transitions, and strengthened investment in adaptation and resilience.

- The [Nurses Climate Challenge](#) is an international campaign to mobilise nurses to educate 50,000 health professionals on the impacts of climate change on human health.
- The Climate and Health Alliance has produced a [communication guide to empower health professionals](#) to talk publicly about climate change and health, while a new [communication guide by Healthy Energy Initiative India](#) provides guidance to healthcare professionals in India.
- The [Youth-Driven Recovery Plan](#) developed by the World Economic Forum's Global Shapers Community, a network of 14,000 inspiring young people, features 40 policy recommendations to help policymakers integrate the voices of the next generation into recovery efforts.
- The [Declaration on Children, Youth and Climate Action](#), developed by youth groups and partners in the lead up to COP25, is the first commitment of its kind to accelerate inclusive, child and youth-centred climate policies and action at national and global levels. Fifteen governments have signed it thus far.
- The Race to Zero brings together more than 40 health institutions, from 18 countries, on every continent, representing more than 3,000 hospitals and health centres, who have joined the UNFCCC Race to Zero with a [commitment to net zero health care](#) by 2050.
- [Climate Impact Checkup](#) is a calculator that helps health care institutions anywhere in the world measure their GHG footprint. It provides a starting point to measure, manage, and support mitigation goals and action planning no matter where a facility is located.

Case Studies

- **RISE - Southeast Asia Alliance for Health and Climate.** The RISE Southeast Asia Alliance was set up in 2020 to mobilise health care leadership for climate action, resilience, and a healthy recovery in South-East Asia. The network supports healthcare leaders in taking climate action by offering opportunities for capacity building and advocacy in South-East Asia. [Learn more here.](#)
- **Health professionals calling for climate action.** A large variety of health groups have organised around the need for more ambitious climate action, e.g. by [calling for a healthy recovery](#), urging their governments to [adopt more ambitious NDCs](#), and releasing [calls to action](#) for COP26.
- **Doctors for Climate in Poland.** Polish health and medical experts have issued a statement that accelerating climate change already impacts people's health in Poland and beyond – and that these effects will continue to worsen. A first in the country, the Doctors for Climate appeal calls on decision-makers to take urgent, decisive and timely measures to protect the climate, for the health and lives of current and future generations. [Learn more here.](#)

- **Keeping the community safe through Humanitarian Youth Clubs in Kiribati.** The Humanitarian Youth Club initiative increases awareness of sexual and reproductive health-care during a crisis and builds connections between youth leaders and the communities in which they live. Youth volunteers are trained in sexual and reproductive healthcare priorities in an emergency and help prepare their community for the impact of king tides and other crises. [Learn more here.](#)
- **Training climate and health leaders in the Caribbean.** A fellowship programme at the University of the West Indies is training a cohort of Caribbean health professionals and practitioners with knowledge and skills on climate change and health. The program focuses on promoting an interdisciplinary One Health approach, tackling the environmental determinants of health, and the prevention and control of COVID-19. [Learn more here.](#)

Find more case studies on the [WHO website](#).

Conclusion

Climate change is the single biggest health threat facing humanity. And while no one is safe from the health impacts of climate change, they are disproportionately felt by the most vulnerable and disadvantaged.

Protecting people's health from climate change requires transformational action in every sector, including on energy, transport, nature, food systems and finance. The public health benefits from implementing these ambitious climate actions far outweigh their costs.

Health leaders everywhere have been sounding the alarm on climate change and are increasingly taking steps to protect their communities from worsening climate impacts, while reducing their own emissions.

The ten recommendations in this report highlight the priority actions governments need to take to confront the climate crisis, restore biodiversity, and protect health. By enacting these urgent changes, governments can ensure a healthy future for our children, grandchildren and future generations.



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References

- 1 Climate change and health: Report by the Secretariat. A61/14. Geneva: World Health Organization; 2008 (<https://cdn.who.int/media/docs/default-source/climate-change/report-by-the-secretariat-on-climate-change-and-health.pdf>, accessed 20 September 2021).
- 2 Healthy Climate Prescription. An urgent call for climate action from the health community ahead of COP26 (website). Healthy Climate Prescription Signatories; 2021 (<https://healthyclimateletter.net/>, accessed 20 September 2021).
- 3 Summary for policymakers. In: Global warming of 1.5°C. An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Intergovernmental Panel on Climate Change; 2018 (<https://www.ipcc.ch/sr15/chapter/spm/>, accessed 20 September 2021).
- 4 Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: Intergovernmental Panel on Climate Change; 2021 (https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf, accessed 20 September 2021).
- 5 Health Inequalities and Climate Change: Action for Global Health Position Paper. Action for Global Health; 2021 (<https://actionforglobalhealth.org.uk/resource-library/>, accessed 20 September 2021).
- 6 COP24 Special report: Health & Climate Change. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/cop24-special-report-health-climate-change>, accessed 20 September 2021).
- 7 Watts N, et al. The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises. Lancet. 2020; 397 (10269): 129-170. doi:10.1016/S0140-6736(20)32290-X.
- 8 Fact Sheet: Universal health coverage (website). Geneva: World Health Organization; 2019 ([https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)), accessed 20 September 2021).
- 9 Report of the Special Rapporteur on extreme poverty and human rights: Climate change and poverty. Geneva: United Nations Human Rights Council; 2019 (<https://www.ohchr.org/EN/Issues/Poverty/Pages/ClimateChange.aspx>, accessed 20 September 2021).
- 10 The 1.5 Health Report. Synthesis on Health and Climate Science in the IPCC SR1.5. Geneva: World Health Organization; 2018 (<https://www.who.int/publications/i/item/the-1.5-health-report>, accessed 20 September 2021).
- 11 Vicedo-Cabrera AM, et al. The burden of heat-related mortality attributable to recent human-induced climate change. Nat. Clim. Chang. 2021; 11, 492-500. doi: <https://doi.org/10.1038/s41558-021-01058-x>.
- 12 Ebi K, et al. Burning embers: synthesis of the health risks of climate change. Environmental Research Letters. 2021; 16.4: 044042. doi: <https://doi.org/10.1088/1748-9326/abeadd>.
- 13 Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: Intergovernmental Panel on Climate Change; 2014 (<https://www.ipcc.ch/report/ar5/syr/>, accessed 20 September 2021).
- 14 Markandya A, et al. Health co-benefits from air pollution and mitigation costs of the Paris Agreement: a modelling study. Lancet Planetary Health. 2018; 2(3), e126-e133. doi: [https://doi.org/10.1016/S2542-5196\(18\)30029-9](https://doi.org/10.1016/S2542-5196(18)30029-9).

- 15 Health Co-benefits From NDC Implementation in China. Geneva: International Institute for Sustainable Development; 2020 (<https://www.iisd.org/system/files/publications/health-ndc-implementation-china.pdf>, accessed 20 September 2021).
- 16 Vandyck T, et al. Air quality co-benefits for human health and agriculture counterbalance costs to meet Paris Agreement pledges. *Nat Commun.* 2018; 9, 4939. doi: <https://doi.org/10.1038/s41467-018-06885-9>.
- 17 Lee I M, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet.* 2012; 380(9838), 219-229. doi: 10.1016/S0140-6736(12)61031-9.
- 18 Kardan O, et al. Neighborhood greenspace and health in a large urban center. *Sci Rep.* 2015; 5(1): 11610. doi: <https://doi.org/10.1038/srep11610>.
- 19 Gascon M, et al. Residential green spaces and mortality: A systematic review. *Environment International* 2016; 86: 60-7. doi: 10.1016/j.envint.2015.10.013.
- 20 Springmann M, et al. Analysis and valuation of the health and climate change cobenefits of dietary change. *PNAS.* 2016a; 113(15): 4146-4151. doi: <https://doi.org/10.1073/pnas.1523119113>.
- 21 Hamilton I, et al. The public health implications of the Paris Agreement: a modelling study. *Lancet Planetary Health.* 2021; 5(2), e74-e83. doi:[https://doi.org/10.1016/S2542-5196\(20\)30249-7](https://doi.org/10.1016/S2542-5196(20)30249-7).
- 22 2021 WHO Health and Climate Change Global Survey Report. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/who-health-and-climate-change-survey-report-tracking-global-progress>, accessed 20 September 2021).
- 23 2021 WHO Review of Health in Nationally Determined Contributions. Geneva: World Health Organization; 2021 (in press).
- 24 Hess J, et al. Guidelines for modelling and reporting health effects of climate change mitigation actions. *Environmental Health Perspectives.* 2020; 128.11: 115001. doi: <https://doi.org/10.1289/EHP6745>.
- 25 Hess J, et al. Strengthening the global response to climate change and infectious disease threats. *BMJ.* 2020; 371. doi: <https://doi.org/10.1136/bmj.m3081>.
- 26 Informing policy and progress: Air quality and Health (website). World Health Organization; 2021 (<https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/policy-progress>, accessed 20 September 2021).
- 27 World Bank Country and Lending Groups (database). World Bank; 2021 (<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>, accessed 21 September 2021).
- 28 SIDS Summit for Health: For a Healthy and Resilient Future in Small Island Developing States. Outcome Statement. Geneva: World Health Organization; 2021 (https://cdn.who.int/media/docs/default-source/sids-summit/sids-summit-for-health---final-outcome-statement.pdf?sfvrsn=7a5db89f_5, accessed 20 September 2021).
- 29 Climate change and health in small island developing states. A WHO special initiative. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/climate-change-and-health-in-small-island-developing-states>, accessed 20 September 2021).
- 30 WHO plan of action on climate change and health in small island developing States 2019 – 2023. Geneva: World Health Organization; 2021 (https://cdn.who.int/media/docs/default-source/climate-change/who-global-strategy-on-health-environment-and-climate-change-in-sids-a72-16.pdf?sfvrsn=3883a519_2, accessed 20 September 2021).
- 31 WHO publishes series of profiles on climate change and health in island states (website). World Health Organization; 2021 (<https://www.who.int/news/item/04-11-2020-who-publishes-series-of-profiles-on-climate-change-and-health-in-island-states>, accessed 20 September 2021).

- 32 SIDS Summit for Health: For a Healthy and Resilient Future in Small Island Developing States. Outcome Statement. Geneva: World Health Organization; 2021 (https://cdn.who.int/media/docs/default-source/sids-summit/sids-summit-for-health---final-outcome-statement.pdf?sfvrsn=7a5db89f_5, accessed 20 September 2021).
- 33 Strategic Actions in Small Island Developing States (website). Geneva: World Health Organisation; 2021 (<https://www.who.int/initiatives/strategic-actions-in-small-island-developing-states/>, accessed 20 September 2021).
- 34 Vandyck T, et al. Integrate health into decision-making to foster climate action. Environmental Research Letters. 2021; 16(4), 041005. doi: <https://doi.org/10.1088/1748-9326/abef8d>.
- 35 Actionables for a healthy recovery from COVID-19 (website). Geneva: World Health Organization; 2020 (<https://www.who.int/news-room/feature-stories/detail/actionables-for-a-healthy-recovery-from-covid-19>, accessed 20 September 2021).
- 36 Harvey F. World health leaders urge green recovery from coronavirus crisis. The Guardian. 26 May 2020 (<https://www.theguardian.com/environment/2020/may/26/world-health-leaders-urge-green-recovery-from-coronavirus-crisis>, accessed 20 September 2021).
- 37 C40 Mayors Agenda for a Green and Just Recovery. C40;2020 (<https://www.c40knowledgehub.org/s/cities-and-coronavirus-covid-19>, accessed 20 September 2021).
- 38 Health inequity and the effects of COVID-19: assessing, responding to and mitigating the socioeconomic impact on health to build a better future. Copenhagen: World Health Organization Regional Office for Europe; 2020 (<https://apps.who.int/iris/handle/10665/338199>, accessed 20 September 2021).
- 39 Achieving a Fossil-Free Recovery. Geneva: International Institute for Sustainable Development; 2021 (<https://www.iisd.org/publications/achieving-fossil-free-recovery>, accessed 20 September 2021).
- 40 UN DESA, UN ESCWA, WHO. Technical Working Group 3: Enabling SDGs through Inclusive, Just Energy Transitions. Draft Report. New York: United Nations, 2021 (<https://www.un.org/pt/hlde-2021/page/technical-working-group-3-enabling-sdgs-through-inclusive-just-energy-transitions>, accessed 21 September 2021).
- 41 Paremoer L, et al. Covid-19 pandemic and the social determinants of health. BMJ. 2021;372:n129. doi: <https://doi.org/10.1136/bmj.n129>.
- 42 Operational framework for building climate resilient health systems. Geneva: World Health Organization; 2015 (<https://www.who.int/publications/i/item/operational-framework-for-building-climate-resilient-health-systems>, accessed 20 September 2021).
- 43 Global Road Map for Health Care Decarbonization: Executive Summary. Healthcare Without Harm; 2021 (<https://healthcareclimateaction.org/sites/default/files/2021-06/Road%20Map%20for%20Health%20Care%20Decarbonization%20Executive%20Summary.pdf>, accessed 20 September 2021).
- 44 Sirleaf E J, Clark H. Report of the Independent Panel for Pandemic Preparedness and Response: making COVID-19 the last pandemic. Lancet. 2021. doi:[https://doi.org/10.1016/S0140-6736\(21\)01095-3](https://doi.org/10.1016/S0140-6736(21)01095-3).
- 45 Helsinki Statement on Health in All Policies (WHA67.12). Geneva: World Health Organization; 2013 (<https://www.who.int/publications/i/item/9789241506908>, accessed 20 September 2021).
- 46 Global Dashboard for Vaccine Equity (website). New York: United Nations Development Programme; 2021 (<https://data.undp.org/vaccine-equity/>, accessed 20 September 2021).
- 47 Vaccine Equity Declaration (website). Geneva: World Health Organization; 2021 (<https://www.who.int/campaigns/vaccine-equity/vaccine-equity-declaration>, accessed 20 September 2021).
- 48 Maibach E, et al. Health professionals, the Paris agreement, and the fierce urgency of now, The Journal of Climate Change and Health. 2021; Volume 1. doi:<https://doi.org/10.1016/j.joclim.2020.100002>.

- 49 WHO Review: Health in the Nationally Determined Contributions. Geneva: World Health Organization; 2019 (<https://www.who.int/publications/i/item/who-review-health-in-the-ndcs>, accessed 20 September 2021).
- 50 Fu-Chun M. Accelerating towards net zero emissions: the most important global health intervention. *Lancet Planetary Health.* 2021; 5(2):e64-e65. doi: [https://doi.org/10.1016/S2542-5196\(20\)30296-5](https://doi.org/10.1016/S2542-5196(20)30296-5).
- 51 Sexual and Reproductive Health and Rights in National Climate Policy. New York: United Nations Population Fund; 2021 (<https://esaro.unfpa.org/en/publications/sexual-and-reproductive-health-and-rights-national-climate-policy>, accessed 21 September 2021).
- 52 Healthy NDCs scorecard (website). Global Climate and Health Alliance; 2021 (<https://climateandhealthalliance.org/initiatives/healthy-ndcs/>, accessed 21 September 2021).
- 53 Climate and Clean Air Coalition, United Nations Environment Programme. Global Methane Assessment. Washington: Climate and Clean Air Coalition; 2021 (<https://www.ccacoalition.org/en/resources/global-methane-assessment-full-report>, accessed 21 September 2021).
- 54 Decision 1/CP.21. Adoption of the Paris Agreement. Bonn: United Nations Framework Convention on Climate Change; 2015 (<https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf>, accessed 21 September 2021).
- 55 2020 Biennial Assessment and Overview of Climate Finance Flows. Bonn: United Nations Framework Convention on Climate Change; 2020 (<https://unfccc.int/documents/217070>, accessed 21 September 2021).
- 56 New elements and dimensions of adaptation under the Paris Agreement (website). Bonn: United Nations Framework Convention on Climate Change; 2019 (<https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/new-elements-and-dimensions-of-adaptation-under-the-paris-agreement-article-7>, accessed 21 September 2021).
- 57 Adaptation Gap Report 2020. Nairobi: United Nations Environment Programme; 2021 (<https://www.unep.org/resources/adaptation-gap-report-2020>, accessed 21 September 2021).
- 58 Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on its second session, held in Madrid from 2 to 15 December 2019. Addendum. FCCC/PA/CMA/2019/6/Add.1. Bonn: United Nations Framework Convention on Climate Change; 2019 (<https://unfccc.int/documents/210477>, accessed 21 September 2021).
- 59 The Katowice climate package: Making The Paris Agreement Work For All (website). Bonn: United Nations Framework Convention on Climate Change; 2020 (<https://unfccc.int/process-and-meetings/the-paris-agreement/katowice-climate-package>, accessed 21 September 2021).
- 60 WHO guidance for climate resilient and environmentally sustainable health care facilities. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240012226>, accessed 20 September 2021).
- 61 Working on a warmer planet: the impact of heat stress on labour productivity and decent work. Geneva: International Labour Organization; 2019 (https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_711919.pdf, accessed 20 September 2021).
- 62 Workman A, et al. The Political Economy of Health Co-Benefits: Embedding Health in the Climate Change Agenda. *International Journal of Environmental Research and Public Health.* 2018; 15(4):674. doi: [10.3390/ijerph15040674](https://doi.org/10.3390/ijerph15040674)
- 63 Haines A, Ebi K. The imperative for climate action to protect health. *N Engl J Med.* 2019;380:263-73. doi: 10.1056/NEJMra1807873.
- 64 Analytical study on the relationship between climate change and the human right of everyone to the enjoyment of the highest attainable standard of physical and mental health. New York: United Nations Office of the High Commissioner for Human Rights; 2016 (<https://www.refworld.org/docid/576b85424.html>, accessed 20 September 2021).

- 65 United Nations Declaration on the Rights of Indigenous Peoples. New York: United Nations; 2007 (https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf, accessed 20 September 2021).
- 66 Eskander S, Fankhauser S, Setzer J. Global lessons from climate change legislation and litigation. Environmental and Energy Policy and the Economy. 2021; 2(1), 44-82. Doi: 10.3386/w27365.
- 67 The 1.5 Health Report. Synthesis on Health & Climate Science In the IPCC SR1.5. Geneva: World Health Organization. 2018 (<https://www.who.int/publications/i/item/the-1.5-health-report>, accessed 20 September 2021).
- 68 Climate and Health GAP Report: Global research developments and gaps for the science on climate change and health. Geneva: World Health Organization; 2021 (in press).
- 69 Berrang-Ford L, et al. Systematic mapping of global research on climate and health: a machine learning review. Lancet Planetary Health. 2021; 5.8: e514-e525. doi:[https://doi.org/10.1016/S2542-5196\(21\)00179-0](https://doi.org/10.1016/S2542-5196(21)00179-0).
- 70 Benefits of action to reduce household air pollution tool (website). Geneva: World Health Organization; 2021 (<https://www.who.int/tools/benefits-of-action-to-reduce-household-air-pollution-tool>, accessed 20 September 2021).
- 71 WHO Manifesto for a healthy recovery from COVID-19. Geneva: World Health Organization; 2020 (<https://www.who.int/publications/i/item/who-manifesto-healthy-recovery-covid19>, accessed 21 September 2021).
- 72 WHO Health and Climate Change Survey Report. Geneva: World Health Organization; 2019 (<https://www.who.int/publications/i/item/who-health-and-climate-change-survey-report-tracking-global-progress>, accessed 21 September 2021).
- 73 World Health Organization, United Nations Children's Fund. WASH in health care facilities: Global Baseline Report 2019. Geneva: World Health Organization; 2019 (<https://www.who.int/publications/i/item/9789241515504>, accessed 21 September 2021).
- 74 Protecting health from climate change: vulnerability and adaptation assessment. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/protecting-health-from-climate-change-vulnerability-and-adaptation-assessment>, accessed 21 September 2021).
- 75 WHO guidance to protect health from climate change through health adaptation planning. Geneva: World Health Organization; 2014 (<https://www.who.int/publications/i/item/who-guidance-to-protect-health-from-climate-change-through-health-adaptation-planning>, accessed 21 September 2021).
- 76 Operational framework for building climate resilient health systems. Geneva: World Health Organization; 2015 (<https://www.who.int/publications/i/item/operational-framework-for-building-climate-resilient-health-systems>, accessed 21 September 2021).
- 77 Quality Criteria for Health National Adaptation Plans. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/quality-criteria-health-national-adaptation-plans>, accessed 21 September 2021).
- 78 Salas R N, Jha A K. Climate change threatens the achievement of effective universal healthcare. BMJ. 2019; 366 :l5302. doi: 10.1136/bmj.l5302.
- 79 Checklists to Assess vulnerabilities in Health Care Facilities in the Context of Climate Change. Geneva: World Health Organization; (<https://www.who.int/publications/i/item/checklists-vulnerabilities-health-care-facilities-climate-change>, accessed 21 September 2021).
- 80 WHO guidance on measuring climate resilience in health systems. Geneva: World Health Organization (in press).

- 81 Zero regrets: Scaling up action on climate mitigation and adaptation for health in the WHO European Region. Working Group on Health in Climate Change. Copenhagen: World Health Organization Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/344733>, accessed 20 September 2021).
- 82 Climate-resilient water safety plans. Managing health risks associated with climate change. Geneva: World Health Organization; 2017 (<https://apps.who.int/iris/handle/10665/258722>, accessed 20 September 2021).
- 83 Ambient air pollution data (database). Geneva: World Health Organization; 2018 (www.who.int/data/gho/data/themes/topics/topic-details/GHO/ambient-air-pollution, accessed 21 September 2021).
- 84 Global Energy Review 2021. Paris: International Energy Agency; 2021 (<https://www.iea.org/reports/global-energy-review-2021>, accessed 21 September 2021).
- 85 Renewable Power Generation Costs in 2020. Abu Dhabi: International Renewable Energy Agency; 2021 (<https://www.irena.org/publications/2020/Jun/Renewable-Power-Costs-in-2019>, accessed 21 September 2021).
- 86 Renewable Energy and Jobs – Annual Review 2020. Abu Dhabi: International Renewable Energy Agency; 2010 (https://www.irena.org/-/media/files/IRENA/Agency/Publication/2020/Sep/IRENA_RE_Jobs_2020.pdf, accessed 21 September 2021).
- 87 Brauer M, et al. Exposure assessment for estimation of the global burden of disease attributable to outdoor air pollution. Environ Sci Technol. 2012;46(2):652-60. doi: <https://doi.org/10.1021/es2025752>.
- 88 Vohra K, et al. Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem. Environmental Research. 2021; 195, 110754. doi: <https://doi.org/10.1016/j.envres.2021.110754>.
- 89 McDuffie EE, et al. Source sector and fuel contributions to ambient PM2.5 and attributable mortality across multiple spatial scales. Nat Commun. 2021; 12, 3594. doi: <https://doi.org/10.1038/s41467-021-23853-y>.
- 90 The Production Gap Report: 2020 Special Report. Nairobi: United Nations Environment Programme; 2020 (https://productiongap.org/wp-content/uploads/2020/12/PGR2020_FullRprt_web.pdf, accessed 21 September 2021).
- 91 Net Zero by 2050. Paris: International Energy Agency; 2021 (<https://www.iea.org/reports/net-zero-by-2050>, accessed 21 September 2021).
- 92 Global and regional coal phase-out requirements of the Paris Agreement: Insights from the IPCC Special Report on 1.5°C. Berlin: Climate Analytics; 2019 (https://climateanalytics.org/media/key_messages_coal_canycw.pdf, accessed 21 September 2021).
- 93 WHO global air quality guidelines. Executive summary. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/i/item/9789240034433>, accessed 01 October 2021).
- 94 SDG 7 Tracking Progress Report 2021 (website). Paris: International Energy Agency; 2021 (<https://trackingsdg7.esmap.org/>, accessed 21 September 2021).
- 95 WHO guidelines for indoor air quality – household fuel combustion. Geneva: World Health Organization; 2014 (<https://www.who.int/publications-detail-redirect/9789241548885>, accessed 21 September 2021).
- 96 United Nations Environment Programme, World Meteorological Organization. Integrated Assessment of Black Carbon and Tropospheric Ozone. Nairobi: United Nations Environment Programme; 2011 (<https://wedocs.unep.org/handle/20.500.11822/8028>, accessed 21 September 2021).
- 97 Poor People's Energy Outlook 2019. Rugby: Practical Action; 2019 (https://infohub.practicalaction.org/bitstream/11283/622030/1/PPEO%202019_Book_For%20Web.pdf, accessed 21 September 2021).
- 98 Lenzen M, et al. The environmental footprint of health care: a global assessment. Lancet Planetary Health. 2020; 4(7), e271-e279. doi: 10.1016/S2542-5196(20)30121-2.

- 99 Health care's climate footprint: How the health sector contributes to the global climate crisis and opportunities for action. Reston: Healthcare Without Harm; 2019 (https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf, accessed 21 September 2021).
- 100 Guidelines for a just transition towards environmentally sustainable economies and societies for all. Geneva: International Labour Organization; 2015 (https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_432859.pdf, accessed 21 September 2021).
- 101 Just transition for health protection. Why disease prevention and zero pollution need to be at the heart of energy investments. Brussels: HEAL; 2020 (<https://www.env-health.org/wp-content/uploads/2020/12/HEAL-Just-transition.pdf>, accessed 21 September 2021).
- 102 Consumption based GHG emissions of C40 cities. C40 Cities; 2018 (<https://www.c40.org/researches/consumption-based-emissions>, accessed 21 September 2021).
- 103 Tracking Transport 2020. Paris: International Energy Agency; 2020 (<https://www.iea.org/reports/tracking-transport-2020>, accessed 21 September 2021).
- 104 Supporting healthy urban transport and mobility in the context of COVID-19. Copenhagen: World Health Organization; 2020 (<https://www.euro.who.int/en/health-topics/environment-and-health/Transport-and-health/publications/2020/supporting-healthy-urban-transport-and-mobility-in-the-context-of-covid-19-2020>, accessed 21 September 2021).
- 105 Transport sector CO₂ emissions by mode in the Sustainable Development Scenario, 2000-2030 (dataset). Paris: International Energy Agency; 2019 (<https://www.iea.org/data-and-statistics/charts/transport-sector-co2-emissions-by-mode-in-the-sustainable-development-scenario-2000-2030>, accessed 21 September 2021).
- 106 Brand C, et al. The climate change mitigation effects of daily active travel in cities. Transportation Research Part D. Transport and Environment. 2021; 93, 102764. doi: <https://doi.org/10.1016/j.trd.2021.102764>
- 107 Lee I M, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. Lancet. 2012; 380(9838), 219-229. doi: 10.1016/S0140-6736(12)61031-9.
- 108 World Urbanization Prospects 2018. New York: United Nations; 2018 (<https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf>, accessed 21 September 2021).
- 109 Integrating health in urban and territorial planning. Geneva: World Health Organization; 2020 (<https://apps.who.int/iris/handle/10665/331678>; accessed 21 September 2021).
- 110 Connecting Global Priorities: Biodiversity and Human Health. A State of Knowledge Review. Geneva: World Health Organization; 2015 (<https://www.who.int/publications/i/item/connecting-global-priorities-biodiversity-and-human-health>, accessed 21 September 2021).
- 111 Griscom, B, et al. Natural climate solutions. Proceedings of the National Academy of Sciences. 2017; 114(44), 11645-11650. doi: <https://doi.org/10.1073/pnas.1710465114>.
- 112 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Intergovernmental Panel on Climate Change. IPBES-IPCC co-sponsored workshop report on biodiversity and climate change. Bonn: IPBES; 2021 (https://ipbes.net/sites/default/files/2021-06/20210609_workshop_report_embargo_3pm_CEST_10_june_0.pdf, accessed 21 September 2021).
- 113 Green and blue spaces and mental health: new evidence and perspectives for action. Copenhagen: World Health Organization Regional Office for Europe; 2021 (<https://www.euro.who.int/en/publications/abstracts/green-and-blue-spaces-and-mental-health-new-evidence-and-perspectives-for-action-2021>, accessed 21 September 2021).

- 114 Summary for policymakers: the global assessment report on biodiversity and ecosystem services. Bonn: Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services; 2019 (https://ipbes.net/sites/default/files/inline/files/ipbes_global_assessment_report_summary_for_policymakers.pdf, accessed 21 September 2021).
- 115 First draft of the post-2020 global biodiversity framework. Montreal: Convention on Biological Diversity; 2021 (<https://www.cbd.int/article/draft-1-global-biodiversity-framework>, accessed 21 September 2021).
- 116 Convention on Biological Diversity, World Health Organization. Connecting Global Priorities: Biodiversity and Human Health. A State of Knowledge Review. Geneva: World Health Organization; 2015 (<https://www.who.int/publications/item/connecting-global-priorities-biodiversity-and-human-health>, accessed 21 September 2021).
- 117 Nature, biodiversity and health: an overview of interconnections. Copenhagen: WHO Regional Office for Europe; 2021 (<https://apps.who.int/iris/handle/10665/341376>, accessed 21 September 2021).
- 118 Report of the Scientific Task Force on Preventing Pandemics. Harvard: Harvard Global Health Institute; 2021 (<https://cdn1.sph.harvard.edu/wp-content/uploads/sites/2343/2021/08/PreventingPandemicsAug2021.pdf>, accessed 21 September 2021).
- 119 Issues Brief: Nature-based recovery. Gland: International Union for the Conservation of Nature; 2021 (https://www.iucn.org/sites/dev/files/iucn_issues_brief_nature-based_recovery_final.pdf, accessed 21 September 2021).
- 120 The future of nature and business. Geneva: World Economic Forum, 2020 (http://www3.weforum.org/docs/WEF_The_Future_Of_Nature_And_Business_2020.pdf, accessed 21 September 2021).
- 121 Global Biodiversity Outlook 5. Montreal: Convention on Biological Diversity; 2021 (<https://www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf>, accessed 21 September 2021).
- 122 Guidance on Mainstreaming Biodiversity for Nutrition and Health. Geneva: World Health Organization; 2020 (<https://www.who.int/publications-detail-redirect/guidance-mainstreaming-biodiversity-for-nutrition-and-health>, accessed 21 September 2021).
- 123 GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990- 2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2019; 393(10184):1958-1972. doi: 10.1016/S0140-6736(19)30041-8.
- 124 Executive Summary: Food Systems Delivering Better Health. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/bitstream/handle/10665/343374/9789240031814-eng.pdf>, accessed 21 September 2021).
- 125 World Health Organization, Food and Agriculture Organization, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme The state of food security and nutrition in the world 2021. Geneva: World Health Organization; 2021 (<https://www.who.int/publications/m/item/the-state-of-food-security-and-nutrition-in-the-world-2021>, accessed 21 September 2021).
- 126 Climate and Clean Air Coalition, United Nations Environment Programme. Global Methane Assessment. Nairobi: United Nations Environment Programme; 2021 (<https://wedocs.unep.org/bitstream/handle/20.500.11822/35913/GMA.pdf>, accessed 21 September 2021).
- 127 Ashkan et al. Health effects of dietary risks in 195 countries, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2019; 393(10184):1958-1972. doi: 10.1016/S0140-6736(19)30041-8.
- 128 Willett W, et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. Lancet. 2019; 393(10170):447-492. doi: 10.1016/S0140-6736(18)31788-4.
- 129 Swinburn B, et al. The global syndemic of obesity, undernutrition, and climate change: the Lancet Commission report. Lancet. 2019.; 393(10173):791-846. doi: 10.1016/S0140-6736(18)32822-8.

- 130 The White/Wiphala Paper on Indigenous Peoples' food systems. Rome: Food and Agriculture Organization; 2021 (<http://www.fao.org/3/cb4932en/cb4932en.pdf>, accessed 21 September 2021).
- 131 Food systems delivering better health: executive summary. Geneva: World Health Organization; 2021 (<https://apps.who.int/iris/bitstream/handle/10665/343374/9789240031814-eng.pdf>, accessed 21 September 2021).
- 132 Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates. Working Paper No. 19/89. Washington: International Monetary Fund; 2019 (<https://www.imf.org/~/media/Files/Publications/WP/2019/WPIEA2019089.ashx>, accessed 21 September 2021).
- 133 Are we building back better: evidence from 2020 and pathways to inclusive green recovery spending. Nairobi: United Nations Environment Program; 2020 (<https://wedocs.unep.org/handle/20.500.11822/35281>, accessed 21 September 2021).
- 134 Erickson P, et al. Why fossil fuel producer subsidies matter. Nature. 2020; 578(7793), E1-E4. doi: <https://doi.org/10.1038/s41586-019-1920-x>.
- 135 Paris Agreement. Bonn: United Nations Framework Convention on Climate Change; 2015 (https://unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english_.pdf, accessed 20 September 2021).
- 136 Banking on climate chaos. San Francisco: Rainforest Action Network; 2021 (<https://www.ran.org/bankingonclimatechaos2021/>, accessed 20 September 2021).
- 137 Adaptation Gap Report 2020 - Executive summary. Nairobi: United Nations Environment Programme; 2021 (<https://wedocs.unep.org/bitstream/handle/20.500.11822/34721/AGR2020.pdf>, accessed 20 September 2021).
- 138 Commonwealth Secretariat, Alliance of Small Island States. We need new criteria for financial support to vulnerable small states in the wake of COVID-19. Co-chairs' summary (website). London: the Commonwealth Secretariat; 2020 (<https://thecommonwealth.org/media/news/we-need-new-criteria-financial-support-vulnerable-small-states-wake-covid-19>, accessed 20 September 2021).
- 139 Communique of African Ministers of Finance, Planning and Economic Development on Covid-19 and the Economic Situation in Africa. Addis Ababa: United Nations Economic Commission for Africa; 2021 (<https://www.uneca.org/sites/default/files/com/2021/E2100446-29March-Eng-COMMUNIQUE.pdf>, accessed 20 September 2021).
- 140 Small Island States call for a systemic debt shake up at IMF and World Bank Meetings (website). New York: Alliance of Small Island States; 2021 (<https://www.aosis.org/release/small-island-states-call-for-a-systemic-debt-shake-up-at-imf-and-world-bank-meetings/>, accessed 20 September 2021).
- 141 OECD Creditor Reporting System (database). Paris: Organisation for Economic Co-operation and Development; 2021 (<https://stats.oecd.org/Index.aspx?DataSetCode=CRS1>, accessed 21 September 2021).
- 142 COP26 Health Programme. Overview of Initiatives and Commitments on Climate Change and Health. Geneva: World Health Organization; 2021 (<https://www.who.int/publications-detail-redirect/cop26-health-programme>, accessed 21 September 2021).
- 143 State of the world's nursing 2020. Geneva: World Health Organization; 2020 (<https://www.who.int/publications/item/9789240003279>, accessed 21 September 2021).
- 144 Global spending on health: a world in transition. Geneva: World Health Organization; 2019 (https://www.who.int/publications/item/WHO-HIS-HGF-HFWorkingPaper-19_4, accessed 21 September 2021).
- 145 Kotcher J, et al. Views of health professionals on climate change and health: a multinational survey study. Lancet Planetary Health. 2021; 5: e316–23. doi:[https://doi.org/10.1016/S2542-5196\(21\)00053-X](https://doi.org/10.1016/S2542-5196(21)00053-X).

- 146 Watts N, et al. The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. *Lancet*. 2019; 394(10211):1836-1878. doi: 10.1016/S0140-6736(19)32596-6.
- 147 Open letter to Child Advocate and Research Institutes (website). Melbourne: Climate and Health Alliance; 2021 (https://www.caha.org.au/protecting_our_children, accessed 21 September 2021).
- 148 Prüss-Üstün A, et al. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks. Geneva: World Health Organization; 2016 (<https://apps.who.int/iris/handle/10665/204585>, accessed 21 September 2021).
- 149 The climate crisis is a child rights crisis. New York: United Nations Children's Fund; 2021 (<https://www.unicef.org/media/105376/file/UNICEF-climate-crisis-child-rights-crisis.pdf>, accessed 21 September 2021).

