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Use the remaining carbon budget wisely for health equity and climate justice



According to the Intergovernmental Panel on Climate Change (IPCC), the estimated remaining carbon budget from 2020 onwards to limit the global average

temperature increase to 1.5°C above pre-industrial levels with a probability of 67% is about 400 Gt carbon dioxide or 1150 Gt carbon dioxide for limiting this

Published Online
July 5, 2022
[https://doi.org/10.1016/S0140-6736\(22\)01192-8](https://doi.org/10.1016/S0140-6736(22)01192-8)



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global heating to 2°C.¹ The IPCC estimates depend on various factors, including the rate at which other greenhouse gases, including methane, decline. If carbon dioxide emissions remain at a constant level, the carbon budget would be used up in about 7 years and 25 years, respectively.²

Key challenges for humanity will include how to divide up this remaining carbon budget, in terms of the fair shares of emissions within and between countries, and how to use this budget to support equitable human development, including the improvement and protection of health. The choice and design of implementation mechanisms such as climate-related regulation, taxation, and pricing policies and the governance systems that can support a just transition towards a net zero emissions economy will also determine the overall effects of these actions on social and health equity.

The pronounced inequities in greenhouse gas emissions and in the projected impacts of climate change mean that high-emitting, generally high-income, nations that have benefited disproportionately from economic growth driven by the burning of fossil fuels and other greenhouse gas emitting activities should cut emissions more rapidly than low-emitting nations. This recognition has led to proposals such as contraction and convergence, whereby countries tailor their climate change mitigation actions on the basis of their emission levels to converge on declining emissions consistent with net zero by mid-century. There are also inequities in individual greenhouse gas emissions: the richest 1% of the world's population globally were responsible for an estimated 15% of cumulative emissions between 1990 and 2015—double the contribution of the poorest half of the world's population.³

A key consideration is how to select actions and policies that can accelerate progress to the net zero economy, capitalising on near-term co-benefits, including for social and health equity and development, while reducing the risks of dangerous climate change. Major health co-benefits include potential reductions in millions of premature deaths related to ambient air pollution annually from a fossil fuel phase out.⁴ Coal combustion contributes to about 50% of such deaths globally.⁵ Economic valuation of such benefits shows that they offset the costs of climate change mitigation actions, partly or wholly, depending on the context.⁶ Additionally, increased consumption of healthy, low greenhouse gas emission diets and the expansion of sustainable

transport systems centred on public transport and active travel could help avert millions of premature deaths annually.⁷ Wider potential development benefits include the provision of employment in different sectors that have a role in creating a net zero economy, including in energy, housing, recycling, and food systems. Carbon dioxide removal through policies such as reforestation and peatland restoration will also be necessary to achieve and maintain net zero emissions. Negative emission technologies exist but have not been implemented at scale; thus, rapid and deep cuts in greenhouse gas emissions are imperative.

Potential trade-offs include the effects of biofuel production on food security and nutrition,⁸ underlining the need to balance the demands for food, animal feed, and fuel from crops.⁹ Increases in exposure to household air pollution could arise from actions to insulate and draught-proof homes in the absence of effective ventilation.¹⁰ Carbon pricing, including taxes, could increase inequalities unless this strategy is designed to be progressive.¹¹ There might also be harmful spillover effects from mitigation measures, including from increased demand for lithium and cobalt for batteries. Exposure to heavy metals, injury risks, and exploitation of labour, including children, may occur when mining takes place in countries, such as the Democratic Republic of the Congo, where artisanal cobalt mining is common and regulations are lax.^{12,13}

It will, therefore, be essential to quantify the potential health and other co-benefits and trade-offs of different policy options for spending the remaining carbon budget and to evaluate the impacts of implementing these options on social and health equity, development, and the climate. Rigorous and transparent approaches are needed to measure greenhouse gas, health, and other benefits because of the diversity of estimates arising from differences in methodology and assumptions.¹⁴ Estimates of co-benefits and trade-offs should include specification of timeframes, counterfactuals, health exposure response functions, effects on equity, and approaches to uncertainty and sensitivity analysis. The potential for greenwashing—ie, misleading claims made about the climate and other benefits of policies—is likely to be substantial as the pressures on policy makers to deliver climate action grow.

One option with a potential global impact is for an international commission of independent experts and

For more on **contraction and convergence** see <http://www.gci.org.uk/contconv/cc.html>

policy makers to undertake an assessment of the policy options that optimise the climate, development, and social and health equity outcomes of greenhouse gas mitigation actions in different socioeconomic settings. Such a commission could involve WHO, in collaboration with relevant stakeholders in the UN system and outside. The commission could recommend which approaches should be used to estimate these benefits and trade-offs, including their equity impacts, and how the implementation of such actions should be monitored and reported, in conjunction with the United Nations Framework Convention on Climate Change. A particular focus should be how to ensure that greenhouse gas mitigation actions reduce inequities in health and wealth, for example, by reducing energy poverty to increase access to clean energy for cooking and heating, expanding access to climate-resilient health and social services, improving affordability and accessibility of healthy and sustainable diets, and building infrastructure. This integrated approach could help build the case for more ambitious cuts in greenhouse gas emissions consistent with the remaining carbon budget and an equitable transition to a net zero economy. Such knowledge would complement work under way to raise the profile of health in the nationally determined contributions to greenhouse gas reductions under the Paris Agreement¹⁵ and to document the health co-benefits of net zero emission actions.¹⁶

The urgency of the situation is evident from the burgeoning evidence from the IPCC of increasing climate change impacts.^{1,17} A recent example of worrying climate trends is the unprecedented extremes of heat in India and Pakistan that were made about 30 times more likely as a result of climate change.¹⁸ The Russian invasion of Ukraine is increasing near-term dependence on coal in some countries and threatening global food security, further emphasising the need for climate action.¹⁹ How the remaining carbon budget is spent and whether it is exceeded will determine the prospects for health and development for the rest of this century and beyond, with crucial consequences for social justice and the stability of societies.

I receive grants from the Wellcome Trust and the Oak Foundation for research for the Lancet Pathfinder Commission; prize money from the Tyler Prize for Environmental Achievement was paid to my institution; I had an advisory role for the Wellcome Trust on climate change and health in 2021 for which my institution

received remuneration; and I am Co-Director of the WHO Collaborating Centre on Climate Change, Health and Sustainable Development.

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