

## Climate change adaptation for health: using case study systems-based approaches to formulating solutions and guiding policy



WHO has stated that climate change presents a fundamental threat to human health,<sup>1</sup> and evidence of its worsening effects worldwide is rapidly accumulating.<sup>2</sup> Communities that contribute least to climate change in low-income and middle-income countries (LMICs) and marginalised groups within countries at different levels of economic development are disproportionately affected. Rapid and decisive action requires both mitigation and adaptation solutions that are better integrated within the Planetary Health framework<sup>3</sup> to encompass the health of human populations and the state of the natural systems (including climate) on which human health depends. Systems-based research<sup>4</sup> that integrates across multiple disciplines and sectors is vital to help clarify complex, dynamic interactions, some with unintended consequences.

The InterAcademy Partnership (IAP), a global network of 150 academies of science, engineering, and medicine, compiled global evidence in two 2022 reports<sup>5,6</sup> to show commonalities within the deteriorating health and equity outcomes of climate change, which warrant shared multiagency approaches to identifying and implementing knowledge-based solutions. In follow-up work, the IAP and Save the Children initiated a call for health adaptation case studies to address the integrated challenges of climate and health within the broad context of the Sustainable Development Goals, the progress of which is currently impaired by climate change. Climate change adaptation needs, as well as capacity to cope with climate impacts, are unequally distributed around the world, and this heterogeneity in societal adaptive capacity is often overlooked.<sup>7</sup> This new case studies-based work focuses on underserved groups such as women and children. A large amount of research literature has been published on the disproportionate mental and physical health burdens on children, but much less information is available on interventions to protect their health. The climate crisis should be regarded as a child rights issue.<sup>8</sup> Initial information on this case studies project by the IAP and Save the Children is summarised in the panel.

Collective assessment of the case studies is now underway to help answer several key questions: What factors are most important for designing effective adaptation actions? How can case studies be used to generalise recommendations for policy and practice? How can systems-based approaches contribute to building decision-making capabilities at the science-policy interface?

Our initial evaluation focuses on identifying wide-ranging issues for designing, implementing, and scaling up health adaptation solutions. These examples illustrate the importance of coproducing solutions with end users in the community for better understanding of the consequences and trade-offs of implementing interventions, and the importance of combining goals for health, equity, and environmental transformative change. Synthesising lessons of good practice also highlights the importance of cross-sectoral integration (ie, including activities within

### Panel: The InterAcademy Partnership-Save the Children case studies project

Case studies were selected following an open call for examples of problem solving. Priority was given to themes of food systems and agriculture, energy (production, distribution, access, and efficiency), urbanisation, and health systems strengthening. The selected case studies included:

- Bangladesh: tackling water scarcity and pollution for improving farming
- Bangladesh: dengue fever community awareness and action
- Benin: evaluating implementation of the National Adaptation Plan
- Brazil: assessing urban heat and pollution impacts
- Ethiopia: mapping urban heat stress for targeted interventions
- Ghana: managing urban flood risk in vulnerable communities
- India: combining mitigation and adaptation for fossil fuel combustion
- Malaysia: health solutions for urban heat islands
- Malaysia: real-time alerts for peatland fire haze
- Philippines: climate-resilient municipal health systems
- South Africa: climate-resilient primary care for mothers and babies
- South Africa: expanding use of neglected crops in marginal areas
- Thailand: human and ecosystem health in a traditional farming community
- Somalia, Pakistan, Sri Lanka, Laos: system dynamics modelling to estimate health benefits of multiple interventions
- Sub-Saharan Africa: improving legume traits for food and nutrition

More information is summarised by the InterAcademy Partnership 2023<sup>9</sup> and full details will be published in an impending volume of individual case studies.

the health sector and wider societal sectors such as industry, energy production, agriculture, and other land use). Furthermore, clarification and, where possible, standardisation metrics are crucial for quantifying climate health adaptation action in order to generate robust evidence to inform policy and practice, to help clarify the limits of adaptation, and to avoid maladaptation.

Although many knowledge gaps need to be filled by new transdisciplinary research, evidence that is already available should urgently be acted on and interventions should be brought to scale. Using systems-based thinking to provide conceptual frameworks and tools is vital for developing policy options, research integration, bringing together the commensurate evaluation of benefits and costs, identifying facilitators and obstacles to action, and attributing responsibilities at the various levels of governance including local, national, regional, and global. The case studies show that capability at the science-policy interface to focus on vulnerable, underserved groups also depends on building trust to ensure policy-maker receptivity for diverse knowledge sources, and on understanding the intersection between climate-health impacts and other health crises and commitments such as the multiple interactions with the COVID-19 pandemic and other major infectious disease threats and the alignment of solutions with existing global health goals, particularly universal health coverage.

In conclusion, this case studies-based research and learning that ranges across diverse health adaptation themes and methodologies helps to underscore the value of a systems-based planetary health approach. Quantifying the health impacts of—and potential solutions to—environmental change can help policy makers account for health impacts across multiple policy domains and thereby set priorities for health and equity. For approximately 10 years, the health community has advocated greater visibility for health issues in climate policy deliberations. That visibility is being realised,

most notably in the first Health Day at the 28th meeting of the Conference of the Parties and now, the agenda for solutions must be rapidly progressed by better, direct application of scientific evidence to policy action. The climate adaptation funding gap has recently increased,<sup>10</sup> and mitigation projects are likely to be favoured over adaptation projects because of their expected financial return on investment. Real-world adaptation case studies, such as those mentioned here, can help to formulate evidence on effectiveness and thereby facilitate sharing and upscaling of adaptation solutions.

We declare no competing interests.

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