ADVANCING SCIENCE FOR SOCIETY: HEALTH, MIGRATION AND TECHNOLOGIES
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CLIMATE ACTION AND HEALTH RESILIENCE

DEFINING THE ISSUE

Climate change is profoundly harming health through its impacts on human and natural systems, and risks undermining health progresses achieved in previous decades. Widespread and rapid changes in the Earth's climate system harm the health of people, animals and ecosystems and the resilience of health and social services[1]. Heat waves are increasing illnesses and deaths globally. More frequent and intense climate events drive population displacement, food and water insecurity, and undernutrition through disruptions to agricultural and food systems. Changing temperatures and biodiversity losses are making more areas hospitable for vector-borne and zoonotic disease transmission by altering insect and wildlife habitats, driving the spread of diseases like dengue and malaria to new regions, and increasing risks of epidemics and pandemics. Growing wildfire-related atmospheric pollution caused by global warming is worsening chronic illness and death from cardiovascular and respiratory diseases, while earlier spring pollen seasons in northern latitudes are increasing risks of allergic respiratory diseases. Mental health challenges are increasing through the trauma and psychological stresses of climate change-related loss of homes, livelihoods, or culture. Heat has direct effects on the nervous and endocrine systems and extreme weather events have indirect psychosocial consequences. Climate change impacts are not experienced equally by all populations. Women, children and youth, older adults, Indigenous Peoples, low-income households, displaced populations, socially marginalized groups, and people in remote communities, Low- and Middle-Income Countries, and the Small Island Developing States are the most at-risk of immediate health threats and worsening of existing health concerns.

Climate action is urgently needed in response to what the UN has defined as the "Triple Planetary Crisis" of interconnected challenges of climate change, biodiversity loss, and pollution. Leveraging the important health benefits of climate mitigation while strengthening adaptation efforts can minimize immediate and long-term health risks. Health systems are already facing profound challenges. Transformation toward more sustainable, low-carbon, climate-resilient health systems is needed to face the double challenge of reducing the carbon footprint of health facilities, products, and supply chains, while improving their ability to prepare for, recover from, and adapt to climate change impacts.

1 WHO (2024). *COP29 special report on climate change and health: Health is the argument for climate action*. World Health Organization, Geneva. https://cdn.who.int/media/docs/default-source/environment-climate-change-and-health/cop29-report_summary.pdf?sfvrsn=2556cbaf_7; IPCC (2022). *Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* https://www.ipcc.ch/report/ar6/wg2/; IPCC (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* https://www.ipcc.ch/report/ar6/wg1/; OECD (2024). *The Climate Action Monitor 2024*, OECD Publishing, Paris. https://doi.org/10.1787/787786f6-en

POLICY RECOMMENDATIONS

RECOMMENDATION 1

Develop and optimize climate change mitigation strategies to maximize transformative health impacts. Reducing greenhouse gas (GHG) emissions from energy, industry, transportation, building sectors, agriculture and food systems can bring enormous health benefits. Some immediate actions include: replace fossil fuels with renewables for energy generation; improve ventilation and insulation of buildings and homes using the passive house concept; employ lower-emissions electric vehicles, public transit, and active transportation; increase consumption of healthy, sustainable diets; and, expand urban green infrastructure. Societal benefits of these actions are fewer deaths, illness, and injuries from extreme weather and air pollution, increased food security, reduced spread of vector-borne diseases to new areas, reduced heat-related mortality, and reduced social and geographic inequities. These health benefits will occur on a shorter timescale than the climate benefits, and will accrue locally even in the absence of strong climate action from other countries in relation to CBDR. Importantly, the health argument for GHG emission reductions could make climate mitigation strategies more desirable and more cost-effective to motivate rapid action.

RECOMMENDATION 2

Support mitigation and adaptation options that mainstream health into biodiversity, food, infrastructure, social protection, and water policies. Climate-resilient agriculture and fisheries can help promote sustainable water and soil management and biodiversity conservation, along with food system transformation to address climate change impacts on food supply and nutrition, improving access to potable water, and reducing exposure of water and sanitation systems to flooding. Ecosystem-based adaptation measures can help safeguard biodiversity and improve ecosystem health. Climate-resilient urban planning (including urban greening and low-carbon transportation networks) can reduce urban heat island effects and improve air quality. Strengthening public health infrastructure, workforce training and capacity, programs, surveillance, and early warning and response systems can help address climate change-related risks and climate-sensitive diseases. Emergency response and recovery planning, evacuation, and shelter provision can address unique challenges faced by underserved populations.

RECOMMENDATION 3

Invest strategically in public health and longevity. Develop new regulations nationally and internationally to facilitate comprehensive transformations of health and social services, increasing their readiness and safeguarding human health from climate change impacts. Reinforcing preventive actions can promote short-term resiliency by alleviating the burden on health systems and longer-term transitions to climate neutrality. Related workforce demands require investments to train healthcare professionals. Strengthening the social safety net through programs and policies that alleviate poverty and protect people from economic shocks helps to secure a livable and sustainable future for all. Adopting a whole-system preparedness approach recognizes health security and the adaptiveness of a nation's socio-economic capacity as essential factors in overall security.

RECOMMENDATION 4

Provide economic and regulatory incentives to foster adaptation, resiliency, and mitigation. Examples of these incentives include reducing taxes or introducing subsidies for new products or technologies that address health impacts of climate change while reducing subsidies and considering a global carbon pricing mechanism and taxation for products that contribute to climate change; working proactively at different levels of government to update and coordinate development, building, or zoning regulations and codes (including planning and construction codes), with consideration of future climate change; supporting the development of occupational safety protocols (through trade deals or supply chain regulations) that address workplace conditions and practices that expose employees to climate change-related risks; and, incentivizing climate change mitigation policies that consider health by promoting them through national and international bodies.

RECOMMENDATION 5

Assess and strengthen climate-resiliency of critical infrastructure, communities, and societies. This includes: strengthening water, sanitation and hygiene infrastructure to protect water safety and security; securing access to key infrastructure and safety shelters, including infrastructure for active transportation; developing relocation plans as a means of last resort (and only implemented with the agreement of affected communities) to protect critical infrastructure and communities with known vulnerabilities, especially in remote areas; designing and retrofitting buildings with low-carbon solutions to enhance indoor air quality, reduce exposure to harmful pollutants, and maintain comfortable

indoor temperatures during extreme heat or cold; and, strengthening the resilience of health systems and public health supply chains to withstand disruptions caused by extreme weather events. Diversifying supply sources, increasing local production capacities, and maintaining strategic reserves of essential medicines, medical supplies, and equipment can maintain the reliability and effectiveness of health systems despite disruptions caused by climate change. Equitably distributed resources for health surveillance, including biomonitoring and genome sequencing, and biomanufacturing for vaccines and treatment technologies, can support One Health and Planetary Health approaches that integrate human, animal, and ecosystem health to better face future pandemics.

RECOMMENDATION 6

Invest in innovative solutions. Increasing investments in knowledge and research driven innovation, generating new approaches to better understand and address risks to health through climate change mitigation, adaptation, and resilience. Also critical are societal and political innovations that involve affected individuals and communities, including Indigenous Peoples, in the definition and co-construction of climate action. Innovative solutions require rigorous data collection, analysis, and sharing on biodiversity, health, socio-economic, and equity impacts of climate change; and, on effectiveness of adaptation and mitigation interventions (e.g., pandemic preparedness, vaccine development for emerging diseases) on ecosystems, health and social systems, and on food, water, and critical infrastructure systems. Policies that foster trans-sectoral collaborations (e.g. between academic institutions, governmental agencies, and private sectors), knowledge mobilization and exchange, and technical capacity building to conduct health analytics, modelling, and intervention implementation relative to climate change, extreme weather events, and emerging diseases provide important foundations to develop innovative climate solutions.

RECOMMENDATION 7

Implement an equity-focused approach in data collection, policy development, and service delivery. Ensuring that climate action policies and health interventions prioritize those at the highest risk of inequities is crucial. This includes adopting inclusive data collection practices that capture the diverse impacts of climate change on communities with known vulnerabilities and those being marginalized or historically overlooked, within and between countries and regions. Policies should be informed by high-quality, appropriately scaled data to identify and address the specific needs of these populations, such as women, children and youth, older adults, Indigenous Peoples, low-income households, people in remote communities, displaced populations, and racialized or socially marginalized groups. Service delivery should be tailored to consider cultural contexts, Indigenous and local knowledges, and involve affected communities in decision-making processes from the beginning. By centering equity, health systems will be better prepared to provide targeted resources and support to those most affected. This will enhance resilience, reduce health disparities, and support the attainment of health-related SDGs.

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