

Josephine Borghi et al.

## Climate finance opportunities for health and health systems

This online first version has been peer-reviewed, accepted and edited,  
but not formatted and finalized with corrections from authors and proofreaders

## Climate finance opportunities for health and health systems

Josephine Borghi,<sup>a</sup> Soledad Cuevas Garcia-Dorado,<sup>b</sup> Blanca Anton,<sup>a</sup>  
Domenico Gerardo,<sup>c</sup> Giulia Gasparri,<sup>c</sup> Mark Hanson,<sup>d</sup> Agnes Soucat,<sup>e</sup>  
Flavia Bustreo<sup>f</sup> & Etienne V Langlois<sup>c</sup>

<sup>a</sup> London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT, England.

<sup>b</sup> Instituto de Economía, Geografía y Demografía, Consejo Superior de Investigaciones Científicas, Madrid, Spain.

<sup>c</sup> Partnership for Maternal, Newborn and Child Health, World Health Organization, Geneva, Switzerland.

<sup>d</sup> Faculty of Medicine, University of Southampton, Southampton, England.

<sup>e</sup> Agence Française de Développement, Paris, France.

<sup>f</sup> Fondation Botnar, Basel, Switzerland.

Correspondence to Josephine Borghi (email: jo.borghi@lshtm.ac.uk).

(Submitted: 31 August 2023 – Revised version received: 22 January 2024 – Accepted: 23 January 2024  
– Published online: 29 February 2024)

### Abstract

Climate change poses significant risks to health and health systems, with the greatest impacts in low- and middle-income countries – which are least responsible for greenhouse gas emissions. The Conference of Parties 28 at the 2023 United Nations Climate Change Conference led to agreement on the need for holistic and equitable financing approaches to address the climate and health crisis. This paper provides an overview of existing climate finance mechanisms – that is, multilateral funds, voluntary market-based mechanisms, taxes, microlevies and adaptive social protection. We discuss these approaches' potential use to promote health, generate additional health sector resources and enhance health system sustainability and resilience, and also explore implementation challenges. We suggest that public health practitioners, policy-makers and researchers seize the opportunity to leverage climate funding for better health and sustainable, climate-resilient health systems. Emphasizing the wider benefits of investing in health for the economy can help prioritize health within climate finance initiatives. Meaningful progress will require the global community acknowledging the underlying political economy challenges that have so far limited the potential of climate finance to address health goals. To address these challenges, we need to restructure financing institutions to empower communities at the frontline of the climate and health crisis and ensure their needs are met. Efforts from global and national level stakeholders should focus on mobilizing a wide range of funding sources, prioritizing co-design and accessibility of financing arrangements. These stakeholders should also invest in rigorous monitoring and evaluation of initiatives to ensure relevant health and well-being outcomes are addressed.

## Introduction

An estimated 3.6 billion people worldwide are highly vulnerable to climate change and therefore exposed to additional health risks. Climate change is expected to contribute 250 000 additional deaths per year by 2030.<sup>1</sup> Climate change also affects economic growth,<sup>2</sup> which can alter governments' resource allocations to health. The distribution of the climate-health burden is highly inequitable, with the greatest impacts in low-and middle-income countries. Paradoxically, these countries account for less than 4% of the global greenhouse gas emissions.<sup>3</sup>

Governments have recognized the interconnected pathways between climate change and health, leading to consensus on bolstering intersectoral collaboration and investing in greener, more resilient health systems, as recognized in the COP28 UAE Declaration on Climate and Health.<sup>4</sup> Moreover, at the Conference of Parties 28 (COP28) during the 2023 United Nations Climate Change Conference in December 2023, multilateral development banks and funders pledged a total of 1 billion United States dollars (US\$) to address the climate-health crisis and agreed on guiding principles for financing climate and health solutions.<sup>5</sup> These principles promote holistic and equitable financing approaches that embed health and climate goals.

In this paper, we provide an overview of existing climate finance mechanisms and their use to promote health, generate additional health sector resources and enhance health system sustainability and resilience, and we explore implementation challenges. By climate finance we refer to finance activities and instruments that are used for either of two main activities. First, climate change mitigation, including reducing carbon emissions. Second, adaptation initiatives such as investments to reduce vulnerability to climate change and build resilience or to address climate loss and damage, that is, the consequences of climate change that go beyond what people can adapt to. In Box 1, we have defined the key terms used in this paper.

## Multilateral funds

Multilateral funds can support mitigation initiatives or adaptation strategies. Such funds offer an important opportunity for health and health systems, as they allow for the inclusion of health and well-being goals.<sup>12,13</sup> Some of the larger multilateral funds include the Green Climate Fund, Adaptation Fund and Global Environment Facility. Public Development Banks have related funds such as the Clean Technology Fund, and others linked to deforestation, smallholder agriculture or renewable energies. However, a recent study estimates that of the

US\$ 9093 million of multilateral adaptation finance support, only US\$ 522 million (5.7%) went to health-related activities between 2009 and 2019.<sup>14</sup> This sum is much less relative to other sectors such as energy, transport or agriculture.<sup>13</sup> These health-related funds are also mainly in the form of grants. To increase resource availability in the health sector, financial institutions could, in addition to providing grants, channel loans, equity or guarantees to climate-related action.<sup>15</sup>

One of the factors limiting the uptake of such funding by the health sector is the limited number of accredited health institutions that can apply for climate finance.<sup>13</sup> Accredited organizations work with countries to develop project ideas and submit funding proposals for approval to multilateral climate funds.<sup>16</sup> Organizations can be public, private or nongovernmental as long as they meet the accreditation standards of the multilateral climate funds, which include, for example, capacity for financial management. Multilateral climate funds and the World Health Organization (WHO) are committed to enhancing access to funds and accreditation for health institutions.<sup>17</sup> However, efforts are also needed to ensure that funds are targeted to countries with both the greatest economic needs and climate vulnerability, and to increase the focus of investments on adaptation. Currently, low-income countries receive only one fifth of approved funds across all sectors, predominantly for mitigation efforts.<sup>18</sup> The Green Climate Fund recently approved a US\$ 25 million project in Lao People's Democratic Republic to strengthen health and climate early warning systems and build health system and community resilience across the country. This project will provide useful learning lessons for future initiatives. Capacity-building at the country level will also be important to ensure climate and health expertise is available to support funding applications.

The newly created multilateral Climate Loss and Damage Fund provides an important opportunity for the health sector. Health is considered a key non-economic loss and damage,<sup>10</sup> which would enable the fund to address health impacts of climate hazards, including the needs of displaced populations, and rebuild damaged health infrastructure. Research valuing health-related loss and damages from climate change will be critical to ensure that the fund fully accounts for these and can support health-related needs. However, many uncertainties remain regarding the fund's operationalization,<sup>19</sup> affecting its actual potential for addressing health and other non-economic loss and damages. Uncertainties remain about the volume of available funds

(given the voluntary nature of contributions), the role of the World Bank as host and the fund's degree of reliance on concessional loans.<sup>20</sup>

## Voluntary market-based mechanisms

Carbon credits are also used to finance multisectoral activities or interventions with substantial health impacts such as investments in clean cookstoves,<sup>21,22</sup> water treatment projects<sup>23</sup> or community forest fire management. Carbon credits represent the avoidance of one tonne of carbon dioxide equivalent with respect to a hypothetical counterfactual. Emissions avoided because of specific projects can be verified against existing standards and sold to third parties wanting to compensate for their own emissions. Carbon credits and voluntary offsetting have the potential to mobilize private sector funds, constituting a potential source of funds for climate and health. However, the volatility and lack of transparency in carbon markets as well the controversy around their effectiveness as an emission reduction strategy constitute important concerns for the use of carbon credits to finance health.<sup>24</sup> Additionally, existing experiences show that it can be complex to align health and climate goals. For example, the cookstoves and fuel switches that most enhance health outcomes do not necessarily maximize emission reduction.<sup>21,22</sup> Equally, households may switch from water boiling towards a less safe treatment to obtain carbon credit income, with negative health impacts.<sup>23</sup> Careful project design, implementation and monitoring, and consideration of health goals from the outset are crucial in light of these concerns.<sup>19,20</sup>

## Taxes and microlevies

Taxation and microlevies aimed at mitigation at the global or national levels may also support the mobilization of revenues for the health sector alongside emissions reductions. The main distinction between taxes and microlevies is the degree of obligation of contributions. Taxes refer to obligatory charges on activities associated with carbon emissions and microlevies involve the voluntary subscription of organizations or countries to earmarking revenue to benefit development activities such as health.

Microlevies on airline tickets, oil and gas are relevant examples. The airline tax, introduced in 2006, taxes the profits from airline tickets to fund global health programmes, mainly through Unitaids.<sup>25</sup> Another example includes the United Nations Trust Fund to Prevent

Chronic Malnutrition, whereby 0.1% of mining, gold, oil and gas revenues of subscribing countries are deposited into the fund.<sup>25</sup>

While seen as predictable and offering long-term funding, microlevies account for a limited amount of revenue and are vulnerable to economic fluctuations.<sup>11</sup> Channelling these funds to health also requires earmarking for health and creating a global pooling mechanism, with an inclusive governance and effective country implementation mechanism. Furthermore, global taxation and microlevies can require many years of negotiations, resulting in additional administration costs and continuing dependency of low- and middle-income countries on higher-income countries' revenue and/or aid.<sup>25</sup> Investments in national taxation and carbon pricing initiatives at the national level are therefore equally important.

Carbon pricing, through emissions trading schemes and carbon taxes, can reduce pollution from fossil fuels, promote health and generate government revenue that can benefit the health sector if it is earmarked for health.<sup>26</sup> Eliminating fossil fuel subsidies, which in 2022 accounted for a record of US\$ 1.3 trillion, has the potential to create fiscal space that can be redirected to health<sup>27,28</sup> and can lead to health co-benefits, potentially reducing health-care demand. Carbon pricing has been implemented in over 60 countries, although in very few low- and middle-income countries.<sup>24</sup> To date, there are few clear examples of explicit allocation of carbon pricing revenues for health – aside from Switzerland, which used carbon tax revenues to reduce health-care insurance payments.<sup>24</sup> The substantial literature on the political economy of carbon pricing revenue identifies some opportunities as well as challenges that apply to health-related uses. The earmarking of revenues for health could enhance the social acceptability of carbon pricing initiatives, facilitating their uptake.<sup>29</sup> However, concerns remain regarding revenue instability and perverse incentives for emission reduction in the longer term.<sup>30</sup>

## Adaptive social protection

While not specifically climate finance, social protection, including safety nets, cash transfers and insurance schemes can be targeted to climate risks.<sup>8</sup> Adaptive social protection offers an opportunity to help reduce the health consequences of climate hazards, providing health-care access for climate-induced displaced populations and encouraging post-hazard care uptake.<sup>31,32</sup> Social protection schemes can also incentivize mitigation actions at the household level, such as installing solar panels or heat-proofing houses, with health co-benefits.<sup>31</sup> Perhaps most

importantly for health, adaptive social protection mechanisms can greatly vary in terms of equity of outcomes and fund additionality, with experts cautioning against an excessive reliance on private insurance mechanisms.<sup>33</sup>

## Conclusion

Recent developments in international climate governance, including the new pledges announced at COP28 to address the climate-health crisis, represent an opportunity for engagement on the health and climate financing nexus.<sup>34</sup> Public health practitioners, policy-makers and researchers should seize this opportunity to leverage climate funding for better health and sustainable, climate-resilient health systems.

However, meaningful progress will require the global community acknowledging and addressing the underlying political economy challenges that have so far limited the potential of climate finance to address health goals. Challenges include issues of geographical distribution of power within multilateral climate institutions, the degree of reliance on profit-generating and market-based financing mechanisms such as private climate insurance and carbon credits, the role of concessional loans in new loss and damage funding, and sector siloed decision-making and resource allocation.<sup>27</sup>

Efforts from global and national level stakeholders should focus on mobilizing a wide range of funding sources, prioritizing co-design and accessibility of financing arrangements, and investing in rigorous monitoring and evaluation of initiatives to ensure relevant health and well-being outcomes are addressed. To ensure climate finance supports health goals, these goals should be included in climate policies such as nationally determined contributions. Currently, only a small number of governments do so,<sup>35</sup> although the rate is higher among low- and middle-income countries and those affected by climate-related extreme weather.<sup>36</sup> Strengthening climate and health expertise will also be important to design effective financing arrangements that benefit joint goals. Emphasizing the wider benefits of investing in health for the economy can help prioritize health within climate finance initiatives.<sup>37</sup> At the same time, it is imperative to work towards (re)structuring financing institutions to empower communities at the frontline of the climate and health crisis including women, children and young people and those in low-income countries to ensure their needs are met.

## Acknowledgements

JB is also employed at the International Institute of Applied Systems Analysis, Laxenburg, Austria.

## Competing interests:

None declared.

## References

1. Lee H, Romero J. Climate change 2023: synthesis report. Contribution of working groups I, II and III to the sixth assessment report of the intergovernmental panel on climate change. Geneva: Intergovernmental Panel on Climate Change; 2023. Available from: [https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC\\_AR6\\_SYR\\_SPM.pdf](https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf) [cited 2024 Feb 12].
2. Noy I, Nualsri A. Fiscal storms: public spending and revenues in the aftermath of natural disasters. *Environ Dev Econ*. 2011;16(1):113–28. <https://doi.org/10.1017/S1355770X1000046X>
3. UNCTAD sets out actions to support least developed countries in the global low-carbon transition. Geneva: United Nations Conference on Trade and Development; 2022. Available from: <https://unctad.org/news/unctad-sets-out-actions-support-least-developed-countries-global-low-carbon-transition#:~:text=The%20world%27s%2046%20LDCs%2C%20home,related%20disasters%20occurred%20in%20LDCs> [cited 2023 Aug 23].
4. COP28 UAE Declaration on Climate and Health. Dubai: United Nations Conference of the Parties 28; 2023. Available from: <https://www.who.int/publications/m/item/cop28-uae-declaration-on-climate-and-health> [cited 2024 Feb 12].
5. COP28 UAE Guiding principles for financing climate and health solutions. Dubai: United Nations Conference of the Parties 28 UAE; 2023. Available from: <https://www.cop28.com/en/guiding-principles> [cited 2024 Feb 23].
6. What are NDCs and how do they drive climate action? New York: United Nations Development Programme; 2023. Available from: <https://climatepromise.undp.org/news-and-stories/NDCs-nationally-determined-contributions-climate-change-what-you-need-to-know> [cited 2024 Feb 12].
7. What are carbon offsets? London: London School of Economics; 2022. Available from: <https://www.lse.ac.uk/granthaminstitute/explainers/what-are-carbon-offsets/> [cited 2024 Feb 12].
8. Ulrichs M, Slater R, Costella C. Building resilience to climate risks through social protection: from individualised models to systemic transformation. *Disasters*. 2019 Apr;43(S3):S368–87. <https://doi.org/10.1111/disa.12339> PMID:30945765
9. State and trends of carbon pricing 2023. Washington, DC: World Bank; 2023. Available from: <http://hdl.handle.net/10986/39796> [cited 2024 Feb 12].

10. Non-economic losses in the context of the work programme on loss and damage. Technical paper. Bonn: United Nations Framework Convention on Climate Change; 2013. Available from: <https://unfccc.int/resource/docs/2013/tp/02.pdf> [cited 2024 Feb 12].
11. Carter B. Micro levies for public global goods. Birmingham: GSDRC Applied Knowledge Services; 2015. Available from: <https://gsdrc.org/wp-content/uploads/2015/12/HDQ1318.pdf> [cited 2024 Feb 12].
12. Sectoral guide: health and wellbeing. Songdo: Green Climate Fund; 2022. Available from: <https://www.greenclimate.fund/document/sectoral-guide-health-wellbeing> [cited 2023 Jun 7].
13. Beyeler N, Schäferhoff M. Improving investments in climate change and global health: Barriers to and opportunities for synergistic funding. San Francisco: UCSF Institute for Global Health Sciences; 2023.
14. Alcayna T, O'Donnell D, Chandaria S. How much bilateral and multilateral climate adaptation finance is targeting the health sector? A scoping review of official development assistance data between 2009-2019. PLOS Glob Public Health. 2023 Jun 14;3(6):e0001493. <https://doi.org/10.1371/journal.pgph.0001493> PMID:37315049
15. Sectoral guide consultation version 1. Health and wellbeing. Incheon: Green Climate Fund; 2022. Available from: <https://www.greenclimate.fund/sites/default/files/document/gcf-health-wellbeing-sectoral-guide-consultation-version-1.pdf> [cited 2024 Feb 23].
16. Partners [internet]. Yeonsu: Green Climate Fund; 2024. Available from: <https://www.greenclimate.fund/about/partners/ae> [cited 2024 Feb 23].
17. Finance for health and climate change. Geneva: World Health Organization; 2024. Available from: <https://www.who.int/teams/environment-climate-change-and-health/climate-change-and-health/country-support/finance-for-health-and-climate-change> [cited 2024 Feb 12].
18. Watson C, Schalatek L, Évéquoz A. The global climate finance architecture. climate funds update. London: Overseas Development Institute; 2022.
19. Getzel B, Robertson M. Will the World Bank make good on the loss and damage fund? London: ODI; 2023. Available from: <https://odi.org/en/insights/will-the-world-bank-make-good-on-the-loss-and-damage-fund/> [cited 2024 Feb 12].
20. Egan N. Many questions remain as new loss and damage fund is formally established at COP28. Lund: Lund University; 2023. Available from: <https://www.lucsus.lu.se/article/many-questions-remain-new-loss-and-damage-fund-formally-established-cop28> [cited 2024 Feb 12].
21. Aung TW, Baumgartner J, Jain G, Sethuraman K, Reynolds C, Marshall JD, et al. Effect on blood pressure and eye health symptoms in a climate-financed randomized cookstove intervention study in rural India. Environ Res. 2018 Oct;166:658–67. <https://doi.org/10.1016/j.envres.2018.06.044> PMID:30015250

22. Freeman OE, Zeriffi H. How you count carbon matters: implications of differing cookstove carbon credit methodologies for climate and development cobenefits. *Environ Sci Technol*. 2014 Dec 16;48(24):14112–20. <https://doi.org/10.1021/es503941u> PMID:25405582
23. Hodge JM, Clasen TF. Carbon financing of household water treatment: background, operation and recommendations to improve potential for health gains. *Environ Sci Technol*. 2014 Nov 4;48(21):12509–15. <https://doi.org/10.1021/es503155m> PMID:25314642
24. Global carbon pricing generates record \$84 billion in revenue. Washington, DC: World Bank; 2022. Available from: <https://www.worldbank.org/en/news/press-release/2022/05/24/global-carbon-pricing-generates-record-84-billion-in-revenue> [cited 2024 Feb 23].
25. Silverman R. Working Group on Value for Money: An agenda for global health funding agencies. Washington DC: Center for Global Development; 2013. Available from: <https://www.cgdev.org/working-group/value-money-agenda-global-health-funding-agencies> [cited 2024 Feb 12].
26. Franks M, Lessmann K, Jakob M, Steckel JC, Edenhofer O. Mobilizing domestic resources for the Agenda 2030 via carbon pricing. *Nat Sustain*. 2018;1(7):350–7. <https://doi.org/10.1038/s41893-018-0083-3>
27. Lie GS, Soucat AL, Basu S. Financing women’s, children’s, and adolescents’ health. *BMJ*. 2015 Sep 14;351:h4267. <https://doi.org/10.1136/bmj.h4267> PMID:26371223
28. Black S, Liu A, Parry IWH, Vernon N. International Monetary Fund fossil fuel subsidies data: 2023 update. Working paper. Washington, DC: International Monetary Fund; 2023. Available from: <https://www.imf.org/en/Publications/WP/Issues/2023/08/22/IMF-Fossil-Fuel-Subsidies-Data-2023-Update-537281> [cited 2024 Feb 12].
29. Carattini S, Carvalho M, Fankhauser S. Overcoming public resistance to carbon taxes. *Wiley Interdiscip Rev Clim Change*. 2018 Sep-Oct;9(5):e531. <https://doi.org/10.1002/wcc.531> PMID:31031823
30. Wang R, Moreno-Cruz J, Caldeira K. Will the use of a carbon tax for revenue generation produce an incentive to continue carbon emissions? *Environ Res Lett*. 2017;12(6):064001. <https://doi.org/10.1088/1748-9326/aa6e8a>
31. Pega F, Shaw C, Rasanathan K, Yablonski J, Kawachi I, Hales S. Climate change, cash transfers and health. *Bull World Health Organ*. 2015 Aug 1;93(8):559–65. <https://doi.org/10.2471/BLT.14.150037> PMID:26478613
32. Silchenko D, Murray U. Migration and climate change – the role of social protection. *Clim Risk Manage*. 2023;39:100472. <https://doi.org/10.1016/j.crm.2022.100472>
33. Richards J-A, Mukayiranga EP. Is climate insurance a global shield, or does climate-related loss and damage require a different approach? London: The Loss and Damage Collaboration; 2022. Available from: <https://www.lossanddamagecollaboration.org/publication/is-climate-insurance-a->

global-shield-or-does-climate-related-loss-and-damage-require-a-different-approach [cited 2023 Aug 23].

34. Mallen E, Joseph HA, McLaughlin M, English DQ, Olmedo C, Roach M, et al. Overcoming barriers to successful climate and health adaptation practice: notes from the field. *Int J Environ Res Public Health*. 2022 Jun 11;19(12):7169. <https://doi.org/10.3390/ijerph19127169> PMID:35742418
35. Health in the nationally determined contributions (NDCs): a WHO review. Geneva: World Health Organization; 2020. Available from: <https://www.who.int/publications/i/item/9789240000674> [cited 2024 Feb 12].
36. Dasandi N, Graham H, Lampard P, Jankin Mikhaylov S. Engagement with health in national climate change commitments under the Paris Agreement: a global mixed-methods analysis of the nationally determined contributions. *Lancet Planet Health*. 2021 Feb;5(2):e93–101. [https://doi.org/10.1016/S2542-5196\(20\)30302-8](https://doi.org/10.1016/S2542-5196(20)30302-8) PMID:33581071
37. Watkiss P, Ebi KL. A lack of climate finance is harming population health. *BMJ*. 2022 Feb 4;376:o313. <https://doi.org/10.1136/bmj.o313> PMID:35121578

### **Box 1 Key terms used in the paper**

#### *Nationally determined contributions*

Countries' self-defined national climate pledges under the Paris Agreement, detailing what they will do to help meet the global goal to pursue 1.5 °C, adapt to climate impacts and ensure sufficient finance to support these efforts.<sup>6</sup>

#### *Carbon credits and offsets*

A carbon credit is a token representing the avoidance or removal of greenhouse gas emissions, measured in tonnes of carbon dioxide equivalent.<sup>7</sup> Offsetting is the act of compensating for CO<sub>2</sub> emissions by purchasing carbon credits in voluntary markets. Intermediaries and brokers play an important role in carbon transactions, potentially capturing an important proportion of rents in the market, as well as leading to substantial lack of transparency.<sup>8</sup> Carbon credits and carbon offsets are often used interchangeably.

#### *Carbon pricing*

Direct carbon pricing includes carbon taxation and emissions trading schemes (similar to offsetting but where companies and firms are legally required to purchase permits to cover their emissions) as well as voluntary offsets. Indirect carbon pricing includes the removal of fossil fuel subsidies and fossil fuel taxation, which might not explicitly tax carbon emissions but can generate equivalent incentives.<sup>9</sup>

#### *Climate loss and damage*

Refers to the consequences of climate change that go beyond the capacity of communities to adapt, including those resulting from catastrophic weather events, droughts, sea level rise, ocean acidification and glacial retreat.

#### *Non-economic loss and damage*

Include the loss of human lives, trauma, displacement and loss of ways of life and cultures. Human health impacts are considered a key non-economic damage in the context of climate loss and damage.<sup>10</sup>

#### *Microlevies*

Involve the voluntary subscription of organizations or countries to earmark funding associated with provide additional funding for specific sector development, including health.<sup>11</sup>

#### *Adaptive social protection*

When safety nets, cash transfers and insurance schemes are targeted to climate risks also offering an opportunity to help mitigate the health consequences of climate hazards.<sup>8</sup>

CO<sub>2</sub>: carbon dioxide.