

# Human mobility, climate change, and health: unpacking the connections



During the past decades, there has been increasing interest to understand the climate change–migration–health nexus.<sup>1,2</sup> Building on this work, this Comment underscores the importance of understanding and addressing the health of climate-related migrants as well as the health of people who migrate into or remain in sites with climate-related health risks.

Efforts to understand the connections between the climate change–migration–health nexus typically start with climate change as a driver of mobility. The UCL–Lancet Commission on Migration and Health,<sup>3</sup> for example, states that climate change could trigger substantial increases in migration.

First, climate change is understood to shape mobility, with consequences for health (figure). Mobility responses to climate change impacts (eg, sea level rise, extreme weather, and disrupted livelihoods) are delineated through three categories: migration, planned relocation, and forced displacement. The current and potential scale of climate-related mobility is contested. And a large body of literature points out that climatic changes interact with political, economic, social, demographic, and environmental drivers to alter and amplify the scale and patterns of migration.<sup>3,4</sup> Nonetheless, climate-related mobility is an issue of sociopolitical and humanitarian concern, with mobile populations variously positioned as frontline victims, a security risk, or adaptive agents responding to climate change impacts.<sup>5</sup> It is important to understand and address health outcomes for people on the move. Outcomes will be diverse, and depend on the nature of mobility and health determinants in sites of origin and return, transit, and migration. Notably, most climate-related mobility will occur within low-income countries and regions where there are existing population health challenges.

Second, climate change-related health risks could shape mobility decisions (figure). Climate change affects health through direct exposures, such as heatwaves or extreme weather conditions, and through complex exposure pathways, such as altered food yields, water insecurity, and changes in disease transmission and vector ecology.<sup>6</sup> There is some evidence that climate-related health

risks contribute to migration decisions. Some people living in drought contexts have been found to migrate temporarily or permanently to improve food security.<sup>7</sup> Yet, many studies indicate that key drivers of migration from sites of food shortage are livelihood diversification and structural determinants.<sup>8</sup> Noting that many people globally live and remain in places with considerable health risk, the extent to which climate-related health risks will drive out-migration is uncertain.

However, two pathways in the climate change–migration–nexus are considerably underexplored and undertheorised. These pathways start with human migration and immobility, rather than climate change impacts, to trace connections within the climate change–migration–health nexus.

First, people move into sites where climate change impacts have consequences for health (figure). In 2019, there were around 272 million international migrants (3.5% of the global population) and more than 740 million internal migrants. The overwhelming majority of people migrate internationally for reasons related to work, family, and study. Others leave their homes and countries for sociopolitical reasons including conflict and persecution.<sup>9</sup> An emerging body of research documents health risks for migrants who move into sites of climate vulnerability. For example, a study of Nepali migrant workers employed in construction in Qatar in 2009–17 documented deaths associated with

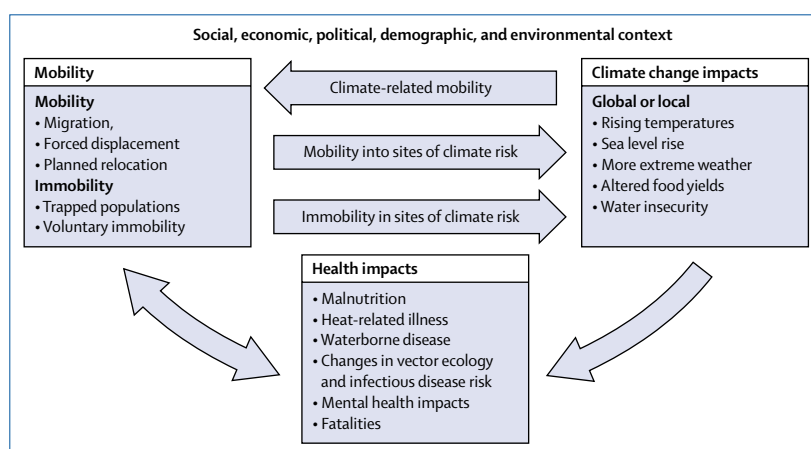


Figure: Human (im)mobility, climate change impacts, and health

excessive heat exposure.<sup>10</sup> Most migrants worked in high temperatures (>31°C), with cardiovascular disease being the major cause of death. The study found that most deaths were probably due to serious heat stroke, with extreme heat due to climate change increasing health risks. In this example, climate change impacts are understood to amplify health risks for populations that migrate for broader social, economic, political, and demographic reasons.

Second, immobile populations live in sites of climate risk with associated health consequences (figure). This includes what are termed trapped populations, who do not have the resources, assets, or networks to enable migration, and voluntarily immobile populations, who choose to remain for reasons of place attachment, sociocultural continuity, and values.<sup>4,5,11</sup> Little empirical research has examined the health impacts of immobile populations. However, some researchers argue that immobile populations living in sites of climate vulnerability might experience adverse health impacts that emerge from changes in water and food security, disease ecology, flooding and saltwater intrusion, and the psychosocial impacts of disrupted livelihoods.<sup>12</sup>

Frameworks that connect climate change, migration, and health can shape research agendas and policy responses. The framework proposed here highlights health outcomes for climate-related migrants. Importantly, it also includes those who move into or remain (voluntarily or involuntarily) in sites with climate-related health impacts. This inclusion matters because, globally, most human (im)mobility occurs for reasons

other than climate change. This framework seeks to broaden population health concerns beyond so-called climate refugees to consider more complex connections between human (im)mobility, climate change, and human health.

I declare no competing interests.

Copyright © 2020 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license.

*Celia McMichael*

[celia.mcmichael@unimelb.edu.au](mailto:celia.mcmichael@unimelb.edu.au)

School of Geography, University of Melbourne, Carlton, VIC 3053, Australia

- 1 McMichael C, Barnett J, McMichael AJ. An ill wind? Climate change, migration, and health. *Environmental Health Perspect* 2012; **120**: 646–54.
- 2 Schütte S, Gemenne F, Zaman M, Flahault A, Depoux A. Connecting planetary health, climate change, and migration. *Lancet Planet Health* 2018; **2**: e58–59.
- 3 Abubakar I, Aldridge RW, Devakumar D, Orcutt M, Burns R, Barreto ML. The UCL–Lancet Commission on Migration and Health: the health of a world on the move. *Lancet* 2018; **392**: 2606–54.
- 4 UK Government Office for Science Foresight. Migration and global environmental change. Final project report. London: Government Office for Science, 2011.
- 5 Boas I, Farbotko C, Adams H, et al. Climate migration myths. *Nat Clim Chang* 2019; **9**: 898–903.
- 6 Watts N, Amann M, Arnell N, Ayeb-Karlsson S, Belesova K, Boykoff M. 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**: 1836–78.
- 7 Afifi T, Liwenga E, Kwezi L. Rainfall-induced crop failure, food insecurity and out-migration in Same-Kilimanjaro, Tanzania. *Clim Dev* 2014; **6**: 53–60.
- 8 van der Geest K, Nguyen KV, Nguyen TC. Internal migration in the upper Mekong delta, Viet Nam: what is the role of climate related stressors? *Asia Pac Popul J* 2014; **29**: 25–41.
- 9 International Organization for Migration. World migration report 2020. 2019. <https://www.iom.int/wmr/> (accessed April 24, 2020).
- 10 Pradhan B, Kjellstrom T, Atar D, Sharma P, Kayastha B, Bhandari G, Pradhan PK. Heat stress impacts on cardiac mortality in Nepali migrant workers in Qatar. *Cardiology* 2019; **143**: 37–48.
- 11 Zickgraf C. Keeping people in place: political factors of (im)mobility and climate change. *Social Science* 2019; **8**: 228.
- 12 Hauer ME, Fussell E, Mueller V, et al. Sea-level rise and human migration. *Nat Rev Earth Environ* 2020; **1**: 28–39.