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Climate change, health, and decent work: a call for combined action

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Climate change is the leading crisis of our times exacerbating issues of health and working conditions for labourers. Whilst research has been undertaken looking at the connection between climate and health, health and work, and work and climate, little has been done to assess the intersection of all three concerns. In this perspective, we outline the need for more integrated thinking to address the wide-reaching impacts of climate change and what that means for the achievement of decent work combined with positive health outcomes. We outline current frameworks and ongoing activities seeking to prevent and mitigate risks to health and work within a changing climate and identify the need for a paired path forward on the local (communities, unions, labour organisations) and global (international and national governance) scales to ensure 'Health-Labour-Climate' drivers and outcomes are comprehensively addressed.

KEYWORDS

mental health, physical health, labour exploitation, social determinants of health, decent work, climate change

1 Introduction

Climate change is described by the World Health Organization (WHO) as "the most significant health threat to humanity" (World Health Organization, 2023a). Influencing the social and environmental determinants of health, the impacts of climate change are often felt most acutely by vulnerable individuals and communities including children, communities of lower socio-economic status, those which are ethnically diverse (Ragavan et al., 2020). This includes those lacking opportunities for decent work. Defined by the United Nations (2006)—and implemented by the International Labour Organization (ILO)—decent work refers to employment that respects human and workers' rights. It is work that provides an income which allows an individual to support themselves and their family and respects the physical and mental welfare of the worker by ensuring "conditions of freedom, equity, security and human dignity" (United Nations, 2006; ILO, 2012). Whereas decent work supports the health and wellbeing of individuals across their lives and protects against social exclusion; poor or exploitative work practices impact both physical and mental health negatively in the short, medium, and long term (Turner-Moss et al., 2014; Ottisova et al., 2016; Prins et al., 2021). Similarly, unemployment has been found to increase both morbidity and mortality (Norström et al., 2014).

The notion of an unequal burden of harms brought about by a public health emergency (in this case climate change) has been evidenced by research on pandemics such as Spanish Influenza in 1918, H1N1 in 2009 and COVID-19 in 2020 (Bambra et al., 2020; Such et al., 2023). Conceptualized under the 'labour-climate change nexus' (see Coelho, 2016; Jackson et al., 2021, 2024; O'Connell, 2021) poor working conditions (in their extreme form) are connected to a myriad of environmental factors and adverse health outcomes. However, this

three-way interconnection is not currently captured within the prevailing conceptualisation. Instead, three separate bodies of literature exist: (1) the relationship between climate change and decent work; (2) the relationship between climate change and health; and (3) the relationship between health and work.

Such intersections are outlined in our adaptation of the 'labour-climate change' nexus (Figure 1), highlighting the bidirectional intersection points between decent working conditions, health outcomes, and climate change impacts. This framework is adapted from preexisting conceptual lenses (see Jackson et al., 2021, 2024—developed in response to extreme forms of exploitation via literature scoping and a roundtable event with experts from environmental and labour organisations) and in combination with the lived experiences shared by a Survivor Research Advisory Board (SRAB) at the University of Nottingham during a series of workshops in 2024–2025. Many of the intersections within the conceptual framework are linked to push factors, meaning climate change increases vulnerability risks and leads to populations being exposed to working conditions that are indecent and detrimental to their health. Alternatively, poor health outcomes interlinked with a changing climate can lead to pull factors in other areas of the economy where employment and livelihood opportunities may be seen as more desirable and secure. The varied scope of climatic impacts also plays a role, with slow-onset risks providing both longer-term opportunities to adapt and respond but can elongate the risks of health issues, whereas rapid-onset climatic hazards can lead to immediate health risks and livelihood vulnerabilities (WHO, 2022). Such considerations align with some of the risks of the most extreme forms of labour exploitation that intersect within broader health, social, economic, and environmental outcomes (Sheu et al., 2021).

This paper aims to explore the 'climate change, decent work and health' nexus. To do this we first summarize the main arguments in each of the three bodies of literature highlighted above (climate change and decent work; climate change and health; health and decent work). We then discuss the intersections and synergies between them, using case study examples to demonstrate the core factors that lead to increased harm for individuals as well as solutions that may reduce harms.

2 Health and climate change

In a recent systematic review by Rocque et al. (2021), the impacts of climate change were associated with negative health outcomes for populations exposed to metrological changes (e.g., heat, humidity) and extreme weather events, such as floods, drought, and hurricanes. Many of these risks align with exposure specific to the health outcomes of workers explored later; and are also associated with system responses to expanding health inequalities due to changing climatic conditions (Romanello et al., 2023). For example, widening inequalities of health outcomes have been linked to race, gender, and socio-economic status (Berberian et al., 2022; van Daalen et al., 2020; Jessel et al., 2019).

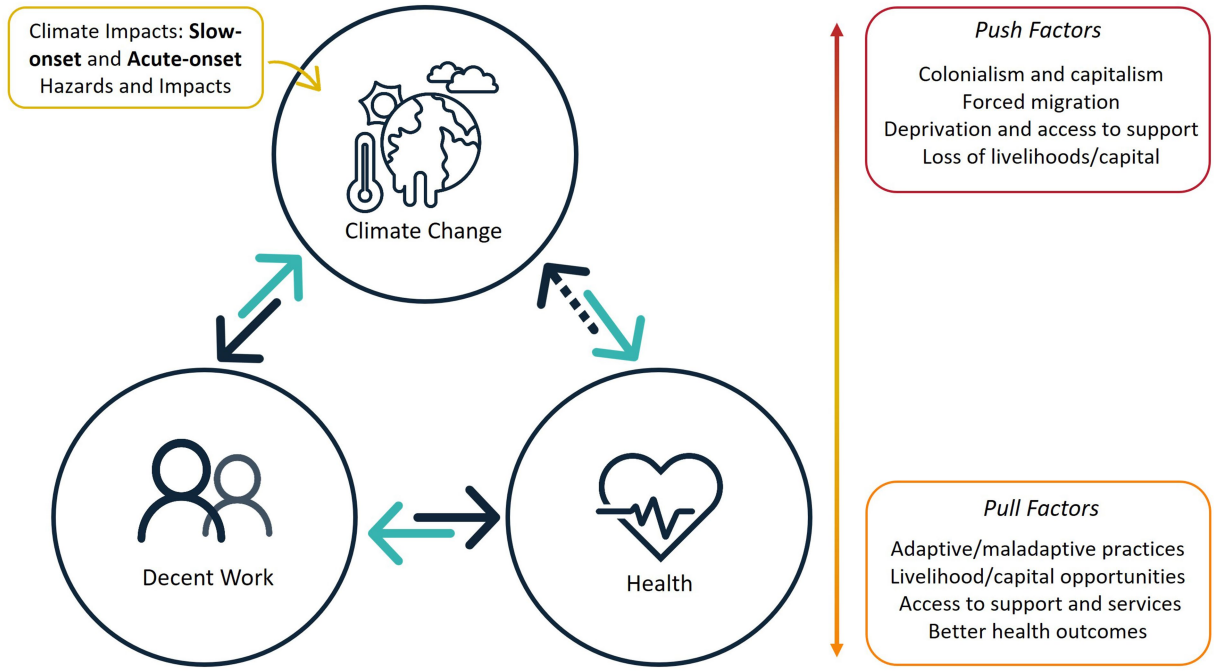

FIGURE 1
Connections between climate change, health and decent work based on an adapted framework from Jackson et al. (2021, 2024), describing the multi-directional connections between the three intersecting topics, termed here as the 'health-labour-climate' nexus and highlighting the 'push' and 'pull' factors that impact communities across the nexus. Climate change can lead to both poor health outcomes and poor working conditions, but those resultant factors can also intersect with one another. For example, a lack of decent work creates conditions ripe for poor health outcomes, and poor health exposure can be associated with the presence of poor work through a myriad of social, economic, and environmental factors that can push and or pull high-risk communities into vulnerable situations. The connections on how health contributes directly to climate change are less clear and have been marked as such in the diagram.

In the field of climate change and health, research has focused on the dominant discourse of heat effects, linked to mortality rate changes (Yadav et al., 2023). Connections to long-term food security such as crop failures and poorer quality produce are associated with malnutrition and ill-health because of droughts or flooding (Lieber et al., 2020; Fanzo and Downs, 2021). Conversely not all the links to health are physical; there is an emerging evidence base focusing on the impact of climate change on mental health. Several synthesis articles have affirmed the hypothesis that climate change is leading to increased levels of anxiety for the public, with knowledge, exposure risk, and access to resources being factors contributing to stressors (Cianconi et al., 2020; Middleton et al., 2020; Charlson et al., 2021). In addition, there is emerging evidence that heat affects biological processes within the body, for example disrupting the gut microbiome, which in turn impacts mental health via the gut-brain axis (O'Riordan et al., 2025). Populations who are exposed to the burden of climate change affects—most commonly in developing countries (Palinkas and Wong, 2020)—and those who have experienced previous climate change-related hazards (e.g., wildfires) are particularly vulnerable (Hrabok et al., 2020).

A further risk that has been linked to climate change is the expanding risk of pandemics and infectious disease transmission—particularly associated with extreme weather events (Romanello et al., 2021). For example, Deutsch et al. (2018) highlighted that there would be an increase in pests because of global warming and there is the risk of human exposure to disease carriers for outdoor workers (Kiefer et al., 2016). For example, the recent COVID-19 pandemic has been viewed as a public health crisis that should be tackled in a coordinated manner alongside climate change responses—as the anthropogenic causes are paralleled (Heyd, 2020; Fuentes et al., 2020)—to mitigate the effects of wide-scale damaging health outcomes for the global population (Zang et al., 2021).

The WHO has espoused the benefits of addressing climate change for public health (WHO, 2021). This was echoed at the UNFCCC Conference of the Parties (COP 28); experts have called for efforts to address the climate crisis to protect health and prevent further health inequities (Friel, 2023).

3 Health and work

In relation to health, good or meaningful work (defined as having a safe and secure job with good working hours and conditions, supportive management and opportunities for training and development) has been found to promote an individual's wellbeing and quality of life (Public Health England, 2019). The Health Foundation (2019) highlights that people who live in areas with high employment rates are more likely to live longer, whereas those in areas affected by economic inactivity and unemployment have reduced healthy life expectancy (the average number of years a person is expected to live without suffering from significant illness/disability). This relationship is bidirectional, for example unemployment leads to poor health, but poor health can also lead to economic inactivity.

The relationship between health and work is multifaceted, affecting an individual's physical, mental, social, and economic wellbeing. Studies such as Flint et al. (2013), Carlier et al. (2013), van der Noordt et al. (2014), and Gebel and Voßemer (2014) highlight the transition from unemployment to employment enhances psychological wellbeing, mental and physical health, quality of life and satisfaction with life. Work also promotes social interaction by increasing social connectedness and providing a social support system, thereby reducing isolation and loneliness—known risk factors for mental ill-health (Jannesari et al., 2022).

Despite the benefits, the work environment and occupation specific factors can contribute to physical and mental health challenges. For example, workers within the 'gig economy', also known as the freelance or on-demand economy, have an elevated level of flexibility in their work practices as they are hired on a per task or per project basis (Malik et al., 2021). However, this means that as informal workers they lack the structure, consistency and security associated with traditional employment, for example regular working hours, paid sick/annual leave and health insurance (Malik et al., 2021). Specific health conditions have also been associated with poor work practices. In particular, the exploitation of people with intellectual disabilities in the workplace has been identified as a pressing social issue. Exploitation can manifest as low wages, unfair working conditions, and limited opportunities for training and development. Disability segregated schemes are noted as particularly problematic and for some scholars constitute a form of forced labour (Steele, 2023).

4 Work and climate change

Whilst climate change is impacting all facets of life, when analysing the connections between work and climate change there are three primary discourses. First, there is a focus on decent work in the context of climate resilience. The second addresses risks to achieving decent work because of changing climatic conditions. Finally, the risks of climate change drive extreme forms of exploitative work, including forced labour.

In the first instance, multi-lateral systems consider decent work often within the context of the 'Just Transition' where capacity building of skills is linked with safe working conditions, and employment can be gained through the promotion of green jobs (ILO, 2017) or sustainable livelihood approaches (Hopner, 2023). This is the goal to achieve decent work, yet as noted by Decker Sparks et al. (2021) much of this transition in and of itself is associated with trade-offs in working conditions for some of the most vulnerable communities. This is particularly the case with work that is linked to the green-energy transition.

Much of the research focused on climate impacts on work has been centered on outdoor workers and linked to occupational safety and health (OSH) risks. This includes worker exposure to multiple elements, including extreme weather and temperature, pests and thus heightened disease risks, and poor air quality (US Environmental Protection Agency, 2023; Dasgupta et al., 2024). Multiple studies have focused on the primary drivers of worker exposure—with an emphasis on the agricultural sector—to wildfires, pesticide usage and heat causing risks to the health of workers (Kiefer et al., 2016; Deutsch et al., 2018; Tigchelaar et al., 2020; Parsons et al., 2021; Schollaert et al., 2023)—demonstrating the linkages between health, work and climate. However, this focus on outdoor workers leaves gaps in understanding related to indoor workers that need to be filled as the exposure and hazards faced vary. Limited work has begun in this area, for example within Cambodian garment factories where climate risks were tracked

for factory workers including heat and pollution exposure (see Parsons et al., 2022).

Finally, it was Coelho (2016) who first emphasized the risks of the most extreme forms of exploitation and the connections to climate change. The risks around climate driving exploitative working conditions have varied impacts depending on the slow-onset nature of the crisis (e.g., long-term drought) or a rapid-onset event (such as a hurricane). In these cases, the ongoing societal, economic, and environmental effects of the climate crisis manifest as a 'stress multiplier' increasing the vulnerabilities of communities to access decent working conditions and leaving them at risk of exploitation instead (Bharadwaj et al., 2022). Links can be drawn to the risks between climate change and health outcomes that align with the vulnerability's communities face in exposure to indecent work (Bharadwaj and Huq, 2022) with health choices and outcomes being altered by the climate and economic circumstances (Bharadwaj et al., 2024).

5 Discussion

Efforts to mitigate and adapt to climate change have been noted as a core outcome of working toward improved health outcomes (Nilsson and Kjellstrom, 2010), but accounting for the effects on decent work to form a clear trifecta and embedding risks in all climate, public health and working conditions responses, requires a step change and deeper integration which has been lacking (Macnaughton and Frey, 2018).

At present there is a focus, rightly, on low- and middle-income countries (LMIC) countries who are most directly exposed to the ongoing effects of climate change despite not being the net contributors to anthropogenic emissions drivers. This aligns with the 'outsourcing' of climate change risks in many cases being assumed to only occur in other locations by high-income countries (HIC) countries who are the primary drivers of such changes (Parsons, 2023). However, this expositional understanding also leads to gaps and the responsibility to respond to climate change and the impact on working conditions and health outcomes of populations within HICs. To understand the true links between decent work, health, and climate change—a truly global and consistent focus is needed that accounts for the effects on all workers.

When considering how to best tackle the intersection of work, climate and health, the Fundamental Principles and Rights at Work (ILO, 2022) have recently integrated the concept of a 'safe and healthy work environment.' As such we propose that the changes made to the decent work agenda should be expanded in scope and present an opportunity for greater operationalization of a safe work environment (Figure 2). At present the decent work agenda has greater focus 'safety' through the lens of OSH, whereas a formal integration of the WHO social determinants of health would demonstrate a clear commitment to health in its broadest form within the context of decent work. Further, Tigchelaar et al. (2025) posit that climate change is a condition that impacts the achievement of this 'safe and healthy work environment' by increasing exposure to hazardous risks linked to climate change and ultimately leading to worse health and injury outcomes for workers. As such direct adaptation and mitigation activities recommended by the Intergovernmental Panel on Climate Change (IPCC) in their assessment reports focused on livelihoods and health should be integrated into the decent work agenda. Continued siloed action around the three nexus nodes will only seek to exacerbate the risks to poor working conditions, negative health outcomes, and continued climate change impacts. By addressing risks via multifaceted interventions, the risks to vulnerable communities may be minimized.

At the international governance level, the ILO is already starting to implement such actions as a singular entity having recognised the hazardous impacts of climate change on healthy work (ILO, 2024). Their activities to date have used a 'Just Transition' lens to seek better approaches to work as climate change affects communities. In the context of an intersectional approach to tackling the 'health-work-climate' issue it is this Just Transition framing which has been combined with a focus on OSH that is driving forward action to address decent work in the context of climate change and public health. The ILO's flagship *Safety + Health for All* (ILO, 2025a) program continues to push forward this OSH lens in the ongoing plan of action to include redress for climate impacts within the workplace (ILO, 2023b). An example of these activities in practice is the work to address OSH including climate change impacts across plantations in India, Nepal, and Sri Lanka (ILO, 2025b). These activities have been seen as a major accomplishment associated with the achievement of decent work. Working with local organisations to support workers in a range of commodity sectors, the ILO has identified extreme weather conditions (e.g., heat and rainfall) as being linked to worse health outcomes for workers. By collaborating with key worker-focused organisations such as unions the ability to respond to OSH concerns via training and implementing innovative information and reporting mechanisms (such as ChatBots). This occurred alongside social dialogue across key government, sectoral and worker organisations to develop action plans on OSH and leverage the expertise of localized frontline actors (ILO, 2025b).

Whilst the ILO alone has a significant role, holistically understanding and addressing climate, work and health concurrently does require an intersectional approach. The ILO should continue to lead in their programming activities, but they should be more visibly collaborating with the WHO and IPCC. This should include the consideration of trilateral negotiations to align efforts on the issues of decent work, health, and climate change; and the implementation of the comprehensive framework included here (Figure 2). Such top-down collaborative efforts should be supported by community-led localized approaches to mitigating climate change whilst ensuring decent work and health for workers. The lived experiences of affected workers should be consulted throughout international negotiations and further provide support at the meso-level (Ahmed et al., 2025) to connect local opportunities for affected communities with international governance structures.

Local worker-led efforts are also seeking to address decent work in the context of climate change, whilst addressing health impacts. For example, in the United States, the Fair Food Program (FFP) led by the Coalition of Immokalee Workers (CIW) has sought to address concerns about climate change (such as excessive heat) through new protocols that address health concerns and poor working conditions (Fair Food Program, 2021). This comes on the back of their establishment which directly targeted the decent work aim of eradicating all forms of compulsory and forced labour as signatories to the FFP must ensure that all workers are free from exploitation. The aim of the FFP was not to directly address the concerns of health or climate but responses have emerged over time as new challenges have

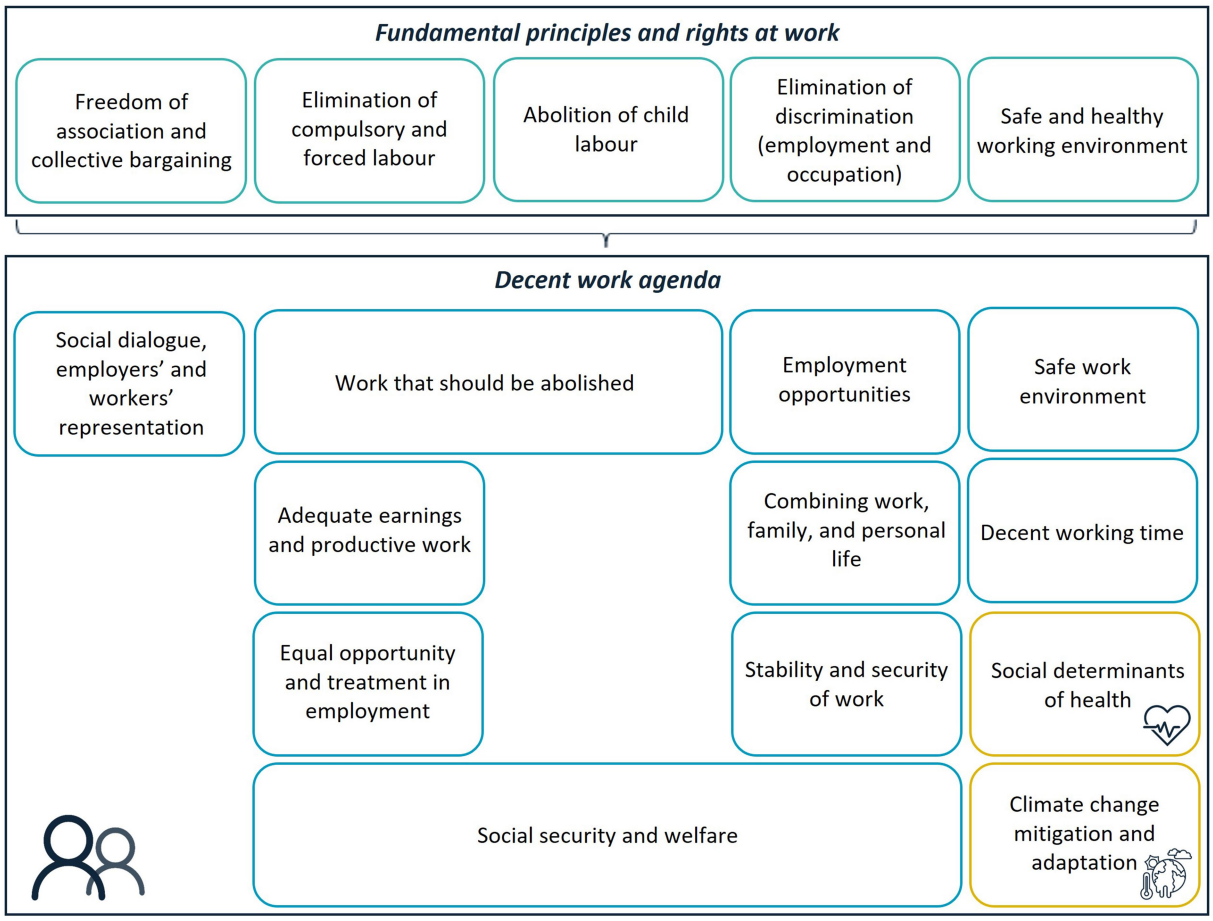

FIGURE 2
The ILO framework on decent work (ILO, 2023a) defined by their components and links to the organisations Fundamental Pillars and Rights at Work (ILO, 2022), adapted from a figure originally developed by Tigchelaar et al. (2025). The safe and healthy work environment are more purposely defined in this update to the ILO decent work agenda through the explicitly inclusion of the World Health Organization social determinants of health (WHO, 2023b), and the periodically updated recommendations related to livelihood and health adaptation and mitigation included in the IPCC *Impacts, Adaptation and Vulnerability* assessments (both marked in yellow) (IPCC, 2022).

risen for workers. Reports directly from farmworkers—as part of their Worker-Social Responsibility (WSR) foundations—have led to changes in provisions with farmers providing shade following grievance reports and auditing. Further, the organisations response plan to address heat stress has been updated to included longer breaks and increased monitoring in response to changing environmental conditions and outcomes for OSH, as well as accessible multilingual training on the impacts to health, symptoms and responses that should be undertaken (Fair Food Standards Council, 2025).

As the climate rapidly deteriorates, the protective factor of decent work helps to enable communities to respond to climate change impacts and improve their health; the crux of a combined approach opens the door to more inclusive justice for communities. The examples above from both the global- and local-scale demonstrate how work within the established decent work agenda can easily and formally integrate aspects of health and climate change. There is however a focus on OSH which should be replaced with a broader social determinants model. By switching the framing to one of public rather than occupational health a broader range of factors influencing risks to workers can be identified and addressed (see Figure 2). Such integration of a public health and social determinants framework has already been suggested in the context of exploitation (see Gardner et al., 2020; Phelan et al., 2022; Such et al., 2024) and has been highlighted as an important way to address health inequalities as part of the decent work agenda (Di Ruggeriero et al., 2015a; Di Ruggeriero et al., 2015b).

An expansion to address the determinants—and tie them to key adaptation and mitigation methods across the health, work, and climate sphere—is likely to have a positive impact. For example, having a decent living wage enables households to access better food and they can better prepare to respond to climate issues such as flooding through the ability to move or access insurance. However, as trends in the economy have shown, precarious work can lead to lower overall income levels which have been associated with poorer healthcare access (Lewchuk, 2017) and may lead to and require more creative ways to respond to climate change beyond the policy norms (Dodman et al., 2023; Vu and Nguyen, 2024). Further, poorer health outcomes driven by poor work and a lack of living standards are likely to be exacerbated by changes to the climate; as well as environmental changes driving risks to supply chain security and raising costs for commodities leading to further financial and health pressures for

communities (Tonn et al., 2021), ultimately limiting opportunities for adaptation to climate change.

Trade-offs may arise, and there is a risk that with the ILO leading on the agenda is that there are no guarantees of implementation at the national and sectoral level and without legally binding initiatives the success of any decent work agenda may lack teeth—this is further complicated by similar issues in the measures put forward in the health and climate space where countries ratify agreements (e.g., the 2015 Paris Agreement) but there are no legal penalties for failing to act and they can be seen as ineffective but that does not mean they are wholly irrelevant (Höflinger, 2020). Instead, the framework we propose here should be seen as a reflection of 'soft law' and be viewed as the minimum standards (Jackson et al., 2025) for tackling intersecting risks of health, work, and climate change. Thus, an integrated intergovernmental framework should encourage integrated understanding and action related to the nexus at multiple levels.

Whilst efforts to curb climate change impacts may appear bleak, the path to addressing such complex and far-reaching issues lies in combined action. Actors across the labour rights space are leading in the integration of nexus elements, but a more consistent global approach integrating known established frameworks (e.g., Figure 2) could lead to more rapid mitigation and responses to risks. This paper has outlined the ways in which climate change, health and work are viewed and why a more concrete understanding of the relationships is required to ensure all elements of the nexus can be concurrently addressed without causing unintended consequences that are negative to either people or the planet. Actions are already being undertaken in this space, but a scaled-up version is required to ensure workers globally have their health and working conditions protected as the climate changes. Only through combined action is this possible.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

Author contributions

BJ: Writing – review & editing, Funding acquisition, Writing – original draft, Project administration, Conceptualization. NW: Writing – original draft, Writing – review & editing, Conceptualization.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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