

# Climate Change and Tourism Work

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## Structured Abstract

### *Purpose*

This perspective paper argues that a consideration of climate change and tourism work is an important research line of enquiry. It highlights aspects of tourism work that need to be considered in relation to the climate effects on work and health, offering a potential future research agenda.

### *Design/Methodology*

This perspective commentary draws from secondary literature sources primarily on climate change and health, and climate change and tourism. This points towards an omission in research specifically on regarding tourism work and climate change, leading to this viewpoint.

### *Findings*

That indicators of climate change along with adaptative measures of climate change should be considered in relation to the specific conditions and contexts of tourism work.

### *Originality*

The climate change effects on tourism workers is an underrepresented area within the discourse of climate change and tourism. This perspective is the first to point out this omission. As the first steps to moving forward in this area, a research agenda is proposed.

## **Introduction**

This perspective paper advocates the need to include tourism work in climate change research and discussions. Whilst there is a well-developed literature on tourism and climate change (Scott & Gössling, 2022, Pan, Wu & Morrison, 2024) little is discussed in relation to climate impacts upon the tourism workforce. This is no surprise as the worker perspective often lags behind, despite the importance of the workforce to the sector (Ladkin et al, 2023). Notwithstanding, Becken & Scott (2024) in their comprehensive tourism and climate change stocktake do identify the need to consider tourism worker safety in the face of climate change and exposure to extreme heat. We add in this perspective paper issues of worker health, working conditions, productivity, and the feasibility and effectiveness of adaptation measures, including current and future trends in automation. We propose a future research agenda.

### **The need for a climate change and tourism work discussion**

The World Health Organization (WHO) states that climate change will adversely affect some of the most important determinants of health (WHO 2021). These include health issues due extreme heat (Romanello et al., 2022), UVR exposure for outdoor workers (John et al., 2021) and indirect effects such as increased water-sanitation issues, vector-borne diseases and air pollution (Francesco Tamilia, 2022). Heat and its effects on health is directly related to productivity loss. During heat waves, productivity loss can be as high as one-third of baseline work when work is physically demanding in high-temperature working conditions (Levi et al., 2018). Using temperature and precipitation aspects of climate change, recent work by Liu et al, (2025) demonstrates a reduction in total factor productivity of tourism in Chinese cities.

Two studies have projected tourism workers' exposure to climate change, both focusing on increased heat in the summer tourism seasons. Kim & Lee (2020) combined the wet bulb globe temperature (WBGT) index with data from the Korean Working Condition Survey to classify occupations vulnerable to heat stress, then estimated future changes in work capacity in Korea. The WBGT is a commonly used

method for assessing direct climate impacts on working, evaluating the effect of heat on a person over the working day, calculated based on climatic variables for indoor conditions or outdoors in the shade (temperature, humidity, solar radiation and wind speed) (ISO, 2017). Among the 147 occupations analysed by Kim and Lee (2020) as at risk of heat stress, sports and recreation-related professionals, chefs and cooks, deliverers, cleaning and sanitation workers and food-related elementary workers were susceptible.

The European project HEATSHIELD projected the effects of climate change on indoor and outdoor workers, focusing specifically on heat waves. The study included (i) microclimatic monitoring of workplaces and physiological characteristics of hospitality workers in Greece before, during and after work, and (ii) a survey of tour guides in Slovenia, both during the summer season. All hospitality workers included in the physiological study showed signs of heat-related stress and were dehydrated even before the start of their shift (Flouris et al., 2018). The research shows they work in unhealthy hot environmental conditions, ranging from 23,7-30,1°C for indoor workers to 27,5-35,1°C for the staff in the kitchen. In Slovenia, 17% of surveyed tour guides assessed that during heat waves their working ability is reduced by more than 30% (Pogačar et al., 2019).

Results from these two studies indicate that tourism workers are at risk from climate change, specifically heat effects, with impacts exacerbated by the working conditions prevalent across the sector. This risk is intensified by the significant numbers of migrant workers in tourism; evidence from other sectors indicates migrant workers are more vulnerable to heat stress as they work longer hours, with greater effort and having received less safety training (Messerli et al., 2019, Floris et al, 2024).

### **Enforcing the right to a safe work environment**

Occupational health initiatives have developed adaptive measures to protect workers from the effects of climate change. These include increasing the number of breaks, using a cooler place for breaks, wearing more suitable/protective clothes, drinking more water, moving work activities early in the morning or in the evening and shading work areas. An important element of the research agenda is comparing workplace

safety regulations and their current effectiveness in different countries and climatic zones. For example, as critiqued by Graveling (2018), current regulations in the European Union mostly adopt non-specific actions that are difficult to enforce by labour and or health inspection (authority) bodies, which vary from state to state, as do their delegated powers. The question for tourism workers, therefore, is the extent to which they may, or may not, be able to access climate change adaptive measures in their working environment due to a lack of employee voice and insecure working contracts.

### **A future research agenda**

As a sector with global reach, tourism has the potential to provide expertise and leadership to investigate the impacts of climate change and work. A future research agenda includes the need to distinguish the impact of climatic conditions on different types of tourism work: outdoor tourism workers (outdoor waitering, outdoor gardening and housekeeping, sports and recreation, tour guides, food deliverers), indoor tourism workers (chefs and cooks, food-related elementary workers, housekeeping, indoor waitering, reception, tour guides) and workers with a high degree of indoor/outdoor work (waitering, baggage porters). Similarly, indicators of climate vulnerability, specifically for tourism workers, such as the global tourism vulnerability study (Scott, Hall, & Gössling, 2019), are a way forward. Integrating climate projections with statistical trends on tourism employment and working conditions would be an important research direction, as evidenced elsewhere (e.g. Mazzarano et al. 2024). Susceptibility to extreme weather events such as storms and droughts also influences working conditions, and research that broadens the scope of climate change impacts on workers beyond heat and temperature is an important way forward. A destination level focus may be useful here, as it could also highlight the scale of the concern for workers in destinations with economies heavily reliant on tourism. Furthermore, currently climate projections do not take into account adaptation measures, including as-yet-unexplored solutions that may emerge as a result of automation and algorithmic management. Automation can be used to lower physical effort needed for specific work tasks and replace workers in extreme environments. Algorithmic management can determine working hours, automated nudging of workers to rest, engage in physical activity or drink water, or automated

monitoring of physiological health signs through wristbands. However, using these measures raises potential ethical questions of workplace surveillance and worker autonomy, as has been discussed in current research on platform work (e.g. Turnšek & Ladkin, 2024). Longitudinal studies are critical, as both climate change and adaptation measures and solutions are subject to change over time. Workers and labour representative organisations must be involved in the process of thinking and adapting working conditions to climate change. Context also matters, with the geographical, cultural and socioeconomic context of tourism work influencing working conditions. For example, tourism workers in the low-and middle income tropical countries are at a higher risk of heat-related impacts not only to the changing weather conditions but due to socio-cultural factors such as dense population and the high-extent of informal work sector (Lucas, Epstein, & Kjellstrom, 2014). Tourism workers in the Global South are likely therefore to be more susceptible to these concerns.

Finally, we advocate that the significant knowledge on climate change and health developed by climatologists, engineers and physiologists can be further enriched by perspectives from management and social sciences, and specifically tourism experts. Translating science into action requires a holistic understanding of tourism work to ensure that tourism workers have their health and safety protected in line with the Fair Work agenda (Hadjisolomou et al, 2022). Climate change adaptation and mitigation initiatives at work have significant social and economic consequences.

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