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## Projections of global labour productivity under climate change

**Nicole van Maanen**, Shouro Dasgupta, Simon N. Gosling, Franziska Piontek, Christian Otto, and Carl-Friedrich Schleussner

Climate Analytics, Climate Science and Impacts, Germany ([nicole.vanmaanen@climateanalytics.org](mailto:nicole.vanmaanen@climateanalytics.org))

Labour productivity declines in hot conditions. The frequency and intensities of extreme heat events is projected to increase substantially with climate change across the world, which causes not only severe impacts on health and well-being but could also lead to adverse impacts on the economy in particular in developing countries. Wet bulb globe temperature (WBGT) is a commonly used metric that combines temperature and humidity to estimate the occurrence of heat stress in occupational health. Although the links between heat stress and economic effects are well established, there are substantial differences between existing impact models of labour productivity.

Here we present results of future changes in labour productivity based on a comprehensive intercomparison of labour productivity models across indoor and outdoor working environments, locations and countries. Under the framework of the Inter-Sectoral Impact Model Intercomparison Project (ISIMIP), we applied projections from multiple bias corrected global climate models to multiple labour productivity impact models and consider different socioeconomic futures. In addition to models used in existing literature, we use a newly developed model based on empirical exposure-response functions estimated from three- hundred surveys (56 million observations) from 89 countries, that allows for projections at the sub-national level. Based on our model intercomparison results, we can provide robust and spatially explicit projections for changes in labour productivity across the globe. At the same time, our approach allows us to assess and compare existing models of labour productivity estimates, therefore covering multiple dimensions of uncertainty.