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The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation

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Abstract

We present a set of indicators of vulnerability and capacity to adapt to climate variability, and by extension climate change, derived using a novel empirical analysis of data aggregated at the national level on a decadal timescale. The analysis is based on a conceptual framework in which risk is viewed in terms of outcome, and is a function of physically defined climate hazards and socially constructed vulnerability. Climate outcomes are represented by mortality from climate-related disasters, using the emergency events database data set, statistical relationships between mortality and a shortlist of potential proxies for vulnerability are used to identify key vulnerability indicators. We find that 11 key indicators exhibit a strong relationship with decadal aggregated mortality associated with climate-related disasters. Validation of indicators, relationships between vulnerability and adaptive capacity, and the sensitivity of subsequent vulnerability assessments to different sets of weightings are explored using expert judgement data, collected through a focus group exercise. The data are used to provide a robust assessment of vulnerability to climate-related mortality at the national level, and represent an entry point to more detailed explorations of vulnerability and adaptive capacity. They indicate that the most vulnerable nations are those situated in sub-Saharan Africa and those that have recently experienced conflict. Adaptive capacity—one element of vulnerability—is associated predominantly with governance, civil and political rights, and literacy.

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