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Global network takes stock of human adaptation to climate change and finds little evidence of risk reduction

As society experiences increasingly frequent and severe natural hazard events and environmental stressors — while making little progress at reducing carbon emissions — the need to adapt to the changing climate has become starkly clear. But what actions are we taking to adapt to climate change around the world — and how successful are our efforts?

A global network of 126 researchers found that adaptation, as documented in the scientific literature, is mostly fragmented and incremental, undertaken primarily by individuals and households, rather than comprehensive and coherent efforts by communities and institutions.

The study, published recently in the journal [*Nature Climate Change*](#), is the most systematic and comprehensive assessment of implemented human adaptation to climate change to date.

Co-author Dr Christopher Trisos shared: "Our results provide a warning call. We found very little evidence of widespread and rapid preparedness at a scale that we think is likely to be adequate to avoid severe climate impacts." Trisos is a senior research fellow at the University of Cape Town's African Climate and Development Initiative (ACDI).

Drilling down on the specific findings of the study, the researchers noted that behavioural adjustments by individuals and households are more prevalent than any other type of response, largely motivated by drought and precipitation variability. Local governments and civil society are engaging in risk reduction across all sectors and regions, particularly in response to flooding. And urban technological and infrastructural adaptations to flood risk are prevalent in Europe, while shifts in farming practices dominate reporting from Africa and Asia.

Poverty and livelihood-related responses were particularly common in Africa and household, or individual-level responses are frequently reported in the context of food, health and poverty in Africa. Responses in Africa are mainly behavioural but Africa has the lowest count globally for institutional responses indicating a severe institutional and governance gap. Further gaps are evident in the geography of observed adaptation-related responses across Africa (largely anglophone). These are likely determined by systemic inequities in climate change research funding across the continent.

Study co-author Dr Nicholas Simpson, a postdoctoral fellow at the ACDI, who led the synthesis of the Africa-relevant findings, noted that the researchers arrived at their findings by employing a sophisticated methodological approach to take stock of climate change adaptation efforts as documented in the scientific literature from 2013-2020 — screening more than 48 000 research articles in the process. They then used systematic literature review methods to synthesise the resulting set of 1 682 articles to identify who, where, and how people are engaging in adaptation.

The release of the study proved timely, just ahead of the 26th United Nations Framework Convention on Climate Change ([COP26](#)) in Glasgow, Scotland.

“The Paris Agreement commits parties participating in COP to track progress toward adaptation,” said Simpson, “but until now little has been known about the actual extent of adaptation — despite a large landscape of research on human response to climate change and associated stressors.”

While there is increasing evidence of adaptation responses, co-author Professor Mark New of the ACDI notes that the study found very little evidence that current adaptation efforts actually reduced risk. He shared: “I am encouraged by how much adaptation we found — the idea that people, communities, and nations are taking action across a wide range of hazards and sectors is encouraging.

“At the same time, I was surprised by how incremental that adaptation is: how much of it looks like business as usual. In this paper, we didn't assess whether current adaptation is sufficient to deal with climate change, but I think the fact that so much adaptation was incremental should raise concerns and should inspire us to make assessing adaptation a priority.”

ACDI postdoctoral fellow and co-author Megan Lukas-Sithole explained: “Our results really highlight the gaps in our understanding about the effectiveness of current adaptation responses for risk and vulnerability reduction.

“Only a small fraction of the literature that we reviewed evaluated these outcomes, which means that we still don't have a clear picture of how adaptation efforts are reducing key risks in diverse places and sectors. This points to a big evidence gap in the scientific literature.”

Luckson Zvobgo, co-author and PhD student with the ACDI and Climate Systems Analysis Group shared that the “evidence gap” discovered in the study's findings has already inspired further research, and he hopes that more will follow in the future. “What was really remarkable about this project was the scale of the collaboration,” he said.

“Working with more than a hundred global scholars meant that our analysis and data could draw on a wide range of perspectives and experiences, and I think we see that breadth of experience coming through in the spin-off papers that draw on the same Global Adaptation Mapping Initiative database to explore a wide range of topics.”

Moving forward Trisos remains optimistic: “Hopefully, this is just the beginning of data that can help governments and practitioners make evidence-based decisions that take global efforts into account.”

[Access the study 'A systematic global stocktake of evidence on human adaptation to climate change' online.](#)

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