

# How are governments, organizations and individuals dealing with the effects of global warming?

October 12 2023

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In 2023, farmers in Namibia tested different varieties, in this case soybeans, for their resistance to increasing water shortages. Credit: UHH/CLICCS/K.Jantke

Viewed globally, it is above all individuals and households that are pursuing adaptation to the impacts of climate change; systematic networking of the various groups affected is lacking. This is the conclusion reached by an international team of experts from Universität Hamburg's Cluster of Excellence for climate research (CLICCS) and Ludwig-Maximilians-Universität München (LMU). Their meta-study was released in the journal *Nature Climate Change*.

For their meta-study, the 30 authors analyzed more than 1,400 academic studies on climate change adaptation. By doing so, they offer the first global overview of which groups of actors are pursuing adaptation—and how.

Their findings show that the global distribution of tasks lacks cohesion. Above all, there are few concepts designed to better prepare societies, infrastructures and [risk management](#) for the impacts of climate change. Extensive collaborations between various government and non-government actors are also lacking.

"Our study indicates that [climate change adaptation](#) continues to be largely isolated and uncoordinated," says Dr. Kerstin Jantke, a co-author and environmental researcher at Universität Hamburg's Cluster of Excellence CLICCS. "That's disproportionate to how pressing and vital this challenge is."

Dr. Jan Petzold, the study's first author, sees a need for action. "Comprehensive, just and forward-thinking adaptation can be considered to be successful when not only official organizations but also



a broad range of groups at all levels are involved," said Petzold.

Petzold, currently a geographer at Ludwig-Maximilians-Universität München, was a member of the Cluster of Excellence CLICCS until the fall of 2021.

To date, primarily individuals and households are taking measures to adapt to climate change impacts, especially in the Global South; very few of them are integrated into institutional frameworks. However, there is also an urban-rural divide. While individual households are largely active in [rural areas](#), government actors tend to coordinate adaptation in cities.

In many cases, the role of governments—global, national and regional—consists in ratifying, planning and financing adaptation measures, while small households are who do most of the technical implementation. According to the study, the scientific community's involvement in adaptation measures is limited, while that of the private economy is virtually non-existent.

"If, around the globe, it's predominantly individuals like farmers and smallholders who are doing the heavy lifting, it also shows us the lack of cooperation between different groups of actors—which is a prerequisite for sustainable adaptation projects," says Jan Petzold. Coordinated concepts are indispensable for far-reaching measures like the [climate](#)-aware restructuring of forests, transforming farmland into floodplains, planning new urban infrastructures, and relocating coastal communities.

Involving different groups of actors can also help avoid undesired effects of adaptation measures. "If I only design a given measure to address a single, pressing problem, it could make the situation worse in other areas," says Kerstin Jantke. For example, levees and dams designed to protect from flooding could destroy coastlines and wetlands, reducing biodiversity or natural CO<sub>2</sub> sinks.

Consequently, comprehensive measures should ideally be oriented on the United Nations' Sustainable Development Goals (SDGs), helping ensure it offers solutions that are tenable in the long term.

**More information:** Petzold J, Hawxwell T, et al., A global assessment of actors and their roles in climate change adaptation, *Nature Climate Change* (2023). [DOI: 10.1038/s41558-023-01824-z](https://doi.org/10.1038/s41558-023-01824-z) , [www.nature.com/articles/s41558-023-01824-z](https://www.nature.com/articles/s41558-023-01824-z)

Provided by University of Hamburg

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