Small temperature rise can cause large scale forced migration: Study

February 23 2023

Credit: AI-generated image (disclaimer)

A 1°C temperature increase can cause a tenfold increase in displaced people, according to new research led by the University of Oxford, which studied the effects of conflict, weather, and drought, on forced displacement in Somalia.

According to the research, a typical reduction in rainfall of 50mm per month mm can also cause displacement to double. But, it reveals, while conflict leads to significant displacement, displacement itself does not cause further conflict.

Dr. Lisa Thalheimer, study lead author and research associate with Oxford's Environmental Change Institute and Climate Econometrics team, says, "The lives of pastoralists and farmers in Somalia are balanced on a knife edge. Even a 1°C rise on normal temperatures—whether sustained or frequently re-occurring over a few months—is enough to cause pastures to dry up and crop yield to change."

"Our research shows these seemingly small temperature changes are having an outsized impact and are forcing communities to leave their homes."

She adds, "Our Somalia research found a 1 °C warming is estimated to lead to a ten-fold increase in expected displacement. It is alarming that, even this marginal change in temperature, has such a huge impact. It highlights the likely effect climate change is having on vulnerable areas across the African drylands."

The study found:

- An increase in local monthly temperature by 1 °C led to an approximate ten-fold (1098%) eventual increase in expected displacement.
- If average monthly rainfall declined from 100mm to 50mm, predicted numbers for internally displaced populations in Somalia doubled.

"The impacts of climate change are already being felt by these

vulnerable regions and are likely to get worse," says study author Moritz Schwarz, from Oxford's Smith School of Enterprise and the Environment.

He adds, "Our research suggests investing in adaptation measures, building local capacity and arranging for rapid humanitarian aid will be key to avoid mass displacement events in future, and helping to stop extreme weather or conflict situations from turning into full blown disasters."

The detailed analysis also revealed that conflict is a major driver of displacement. The role of conflict on forced migration has been hard to understand, and can be masked when combined with other self-reported reasons for migration such as drought, say the authors.

The study also investigated if displaced persons increase the probability of conflict in their destination region, possibly through increased pressure on scarce resources such as food and drinking water. But this was found not to be the case.

Dr. Felix Pretis, a study author from the University of Victoria, says, "Crucially, we find little effect of incoming displaced people on conflict itself…This finding is novel, and dispels the common myth that displacement might further fuel conflicts."

The international team, based at Oxford's Climate Econometrics, the University of Victoria, and Princeton University, analyzed highly-detailed localized data from the 18 separate regions of Somalia, exploring the reasons over two million people were forced to flee over a two year period.

The study is published in the journal *Global Environmental Change*.

More information: Lisa Thalheimer et al, Large weather and conflict effects on internal displacement in Somalia with little evidence of feedback onto conflict, *Global Environmental Change* (2023). DOI: 10.1016/j.gloenvcha.2023.102641

Provided by University of Oxford