

Africa research explores the complex influence of changes in climate upon migration

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(PhysOrg.com) -- Governments need to take multiple factors into account if they are to plan effectively for population displacement as a result of drought, new research from the University of Sussex reveals.

Existing predictions of the number of people likely to be displaced as a result of future climate change events in vulnerable parts of the world don't offer a realistic basis upon which governments and aid agencies can plan appropriately, say the researchers.

It's an issue that has driven United Nations efforts to develop international strategies for dealing with the economic and social consequences of climate change.

The new research by University of Sussex geographers suggests that the relationship between climate change and migration is highly complex with additional demographic components affecting the scale of migration forecast.

Any plans to mitigate the influence of climate change upon migration would thus have to be developed from forecasts that consider climate change and population growth together.

Dominic Kniveton, Professor of Climate Science and Society at the University of Sussex and researcher Christopher Smith, created a

computer simulation of how individual migration decision-makers in Burkina Faso interact to produce group-level behaviour in the form of migration flows.

Developed from a household survey which gave insight into the migration responses of Burkinabé people to past rainfall variability, and using theories of human behaviour borrowed from social psychology, the model tested the influence of a range of future scenarios of regional climate change (taken from a recent EU project, ENSEMBLES) and population growth (provided by the United Nations Statistics Division of the Department of Economic and Social Affairs) upon migration.

One of the poorest countries in the world, Burkina Faso is situated in dryland West Africa. Making up 40 per cent of the Earth's land mass, drylands are characterised by low rainfall, high evaporation and supports one third of the world's population, many of whom rely on rain-fed agriculture for survival.

Such communities are vulnerable to the likely impacts of future changes in climate. The Intergovernmental Panel on Climate Change suggests that yields from rain-fed agriculture in some African countries could be reduced by up to 50 per cent by 2020.

The researchers modelled the different migration flows resulting from each combination of climate and population growth scenario in five different zones in Burkina Faso. Each zone was classified as having below average, average or above average rainfall over a period of 81 years from 1970 to 2050.

The simulations showed how the combination of demographic pressures and climate might influence the extent of any future migration within and from Burkina Faso. The researchers concluded that climate change alone was not an accurate predictor of migration but must be considered

alongside numerous other complex contributing factors, including population growth.

Professor Kniveton says: “Migration from climate change is a growing issue for the governments of the world. By simulating migration flows based on past migration behaviour we have shown that these governments need to be prepared for enhanced and emergent migration responses to climate change because of population growth.”

Christopher Smith says: “As well as the emergence of a growing influence of [climate change](#) upon migration with increased [population growth](#), it was interesting to see that the model simulated both drier and wetter than average conditions as resulting in decreased modeled [migration](#).”

More information: ‘Emerging migration flows in a changing climate in dryland Africa’, Dominic R. Kniveton, Christopher D. Smith and Richard Black is published online in *Nature Climate Change*.

Provided by University of Sussex

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