

Climate change-influenced refugee crisis may lead to long-term settlement issues

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Computer simulations of how extreme climate events like floods and droughts influenced migration, researchers found that climate change may not just affect people leaving an area, but it can also affect how many of those people return to that area later. Credit: Pikist

While many models suggest that climate change will prompt a substantial number of people to leave their homes, not all research so clearly finds this is the case. Investigating cases where computer models seemed to indicate only limited impacts of climate change on people leaving rural areas, a team of researchers now suggest that the models may reveal a more nuanced circular migration pattern in areas stricken by climate change impacts.

In [computer simulations](#) of how [extreme climate events](#) like floods and droughts influenced migration in a region of northeast Thailand with high rates of circular migration, researchers found that [climate](#) change may not just affect people leaving an area, but it can also affect how many of those people return to that area later, said Ashton Verdery, Harry and Elissa Sichi Early Career Professor of sociology, demography and [social data analytics](#), and an affiliate of the Population Research Institute and Institute for Computational and Data Sciences, Penn State.

Past interpretations of migration computer models in this region had indicated that issues spawned by climate change, such as floods and droughts, had only limited influence on people leaving an area. This perplexed researchers because it seemed contrary to typical human behaviors.

"When [extreme weather events](#) occur, the crop yields go down and the asset values, for example homes and land, go down, as well," said Verdery. "Our model's equations on how people are supposed to act in those conditions suggest that migration rates should go up. But they end up not going up in those models. We realized that there didn't seem to be any work on what happens to that return migration stream—people returning to their homes after migration—in these big climate models, so we became interested in looking at exactly what is happening in the return migration part of this process."

The researchers focused on the return flow of migrants in this circular migration pattern. In most cases, when people migrate from the area being studied, statistically a large share of them will move back. Some of those who come back, then, will leave once again, said Verdery, who worked with Barbara Entwisle, Kenan Distinguished Professor of Sociology at the University of North Carolina at Chapel Hill; and Nathalie Williams, associate professor of sociology at the University of Washington. However, a neglected effect of climate change may mean that fewer migrants in such circular migration streams are returning home, he added, and, therefore, do not show up in the out-migration statistics.

The researchers found this pattern occurred in all 40 villages in the study and across numerous scenarios.

Besides making better sense of previous computer models, the findings could help officials better plan for both climate change-influenced migration, as well as prepare for more permanent resettlement of those migrants.

"The ultimate story is that these villages depopulate over time, but this adds some nuance to what could be occurring in different places and may have some policy implications," said Verdery. "For example, while the villages are facing depopulation, the people who leave these villages may be moving to cities and staying there, so the city will be looking at how to help these people settle and how to deal with all the processes associated with longer-term settlement."

The researchers, who report their findings in a recent issue of the *American Journal of Sociology*, used data from an interdisciplinary study of the Nang Rong District in Thailand. The study, which built on data and insights collected over several decades, included teams of sociologists, demographers, geographers, ecologists, mathematicians,

economists, and others from the University of North Carolina at Chapel Hill and Mahidol University in Bangkok.

On the social side of the data collection, the Nang Rong Projects consist of a series of community surveys and household censuses conducted in villages of Nang Rong District in 1984, 1994 and 2000, with additional follow-up surveys of migrants living in destination areas that were identified by origin households in the 1994 and 2000 survey rounds. Additional qualitative work and spatial surveys spanning the 1980s to the 2010s was also conducted.

The Nang Rong District served as the focus of the study because of the large amount of data that teams have collected over two decades and, because of its agricultural reliance, it was susceptible to climate- change-related impacts, such as droughts and flooding, according to Verdery.

In the future, the researchers suggest that more research should be conducted on [climate change](#) influences on the entire migration process, including return [migration](#).

More information: Barbara Entwisle et al. Climate Change and Migration: New Insights from a Dynamic Model of Out-Migration and Return Migration, *American Journal of Sociology* (2020). [DOI: 10.1086/709463](#)

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