

Climate change could open trade opportunities for some vulnerable nations

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Tanzania is one developing country that could actually benefit from climate change by increasing exports of corn to the U.S. and other nations, according to a study by researchers at Stanford University, the World Bank and Purdue University.

The study, published in the *Review of Development Economics*, shows the African country better known for safaris and Mt. Kilimanjaro has the potential to substantially increase its maize exports and take advantage of higher [commodity prices](#) with a variety of trading partners due to predicted dry and hot weather that could affect those countries' usual sources for the crop. In years that major consumer countries such as the U.S., China and India are forecast to experience severe dry conditions, Tanzania's weather will likely be comparatively wet. Similarly, in the relatively few years this century that it is expected to have severe dry weather, Tanzania could import corn from trading partners experiencing better growing conditions.

"This study highlights how government policies can influence the impact that we experience from the [climate system](#)" said study co-author Noah Diffenbaugh, an assistant professor of environmental [Earth system science](#) at Stanford's School of [Earth Sciences](#) and a center fellow at the Stanford Woods Institute for the Environment. "Tanzania is a particularly interesting case, as it has the potential to benefit from [climate change](#) if [climate](#) model predictions of decreasing drought in East Africa prove to be correct, and if trade policies are constructed to take advantage of those new opportunities."

Tightening restrictions on crop exports during times of climate instability may seem like a logical way to ensure domestic [food availability](#) and price stability. In fact, the study warns, trade restrictions such as those that Tanzania has instituted several times in recent years prevent countries such as Tanzania from buffering its poor citizens in bad climate years and from taking advantage of economic opportunities in good climate years.

The study, the most long-range and detailed of its kind to date uses economic, climatic and agricultural data and computational models to forecast the occurrence of severe dry years during the next nine decades in Tanzania and its key trading partners. The authors began by analyzing historical years in which Tanzania experienced grains surpluses or deficits. They found that a closed trade policy enhanced poverty in both kinds of years, by limiting the ability to offset shortfalls with imports during deficit years and limiting the ability to profit from exports during surplus years.

The authors then attempted to predict how often Tanzania and key trading partners will experience severely dry years in response to continued global warming. Among the predictions: during an average of 96 percent of the years that the U.S. and China are predicted to have extremely dry conditions, Tanzania will not experience similarly dry weather. For India, that percentage increases to 97 percent. Similarly, the study's climate models suggest that Tanzania is likely to have adequate growing season moisture in most of the years that its key African trading partners experience severe dry weather.

Among Tanzania's trading partners, the U.S., China, Canada and Russia are most likely to consistently experience adequate growing conditions in years when Tanzania does not. When compared with all of its key trading partners, Tanzania's dry years during the 21st century will often coincide with non-dry years in the other countries. Having a diverse mix

of trading partners could help hedge against a coincidence of severe [dry weather](#) within and outside of Africa, the study's results suggest.

The findings are relevant to grain-growing countries around the world. Those countries stand to profit from exports in years when trading partners are enduring severe dry and / or [hot weather](#). Likewise, they can buffer themselves against bad growing weather at home by importing from grains-rich regions less affected by such weather during that particular year.

"This study highlights the importance of trade in either buffering or exacerbating the effects of climate stresses on the poor," says Diffenbaugh. "We find that these effects are already taking place in the current climate, and that they could become even more important in the future as the co-occurrence of good and bad years between different regions changes in response to global warming."

Provided by Stanford University

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