

World food security more vulnerable than ever to climate change

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A new study, published today (2 August) in *Science*, has called for a 'climate-smart food system' to prevent climate change from slowing progress in eradicating global hunger.

The researchers carried out a review of key scientific papers on <u>food</u> security and climate change since 1990. It confirmed a robust and coherent global pattern of climate change impacts on <u>crop productivity</u> that could have consequences for <u>food availability</u>.

The review highlighted improvements in agricultural technologies, such as more productive and climate-resilient <u>crop varieties</u>, are important to



counter this threat, but are unlikely to be sufficient on their own. Wider changes in food trade and stocks, and nutrition and social policy options are also critical.

The last few decades have witnessed a substantial decline in the number of hungry people worldwide. However, since 2007, progress has slowed and world food supply and demand have been precariously balanced climate change threatens to tip this balance, most dramatically in the poorer areas of the world.

Professor Tim Wheeler, from the University of Reading's Walker Institute for Climate System Research and lead author of the review, said: "The food price spike of 2008 highlights the increasing vulnerability of the global food system to shocks, such as extreme weather and economic volatility. A step change is needed in efforts to create a 'climate-smart food system' that can better withstand whatever climate throws at us. This should include development of drought- and heat-tolerant crops or new tillage techniques that reduce release of carbon from soils, but we need to go further and ensure trade, investment and development policies all have 'climate-smart' food as a central goal."

Warmer temperatures, changes in <u>rainfall patterns</u> and more <u>extreme</u> <u>weather</u> under climate change are expected to affect food and fodder production, change patterns of pest and diseases of crops and animals and impact on food supplies. Countries where these impacts are expected to be negative are also those where hunger is most prevalent now. Extreme weather, such as floods, drought and heatwaves, contributes to short term food price spikes and longer term climate change is likely to be an important factor in future price trends. Volatile food prices are a particular concern to the poor, who often spend a high proportion of their income on food.



Professor Joachim von Braun, from Bonn University's Center for Development Research in Germany and co-author of the paper, said: "Human suffering due to the <u>climate change impacts</u> on <u>food security</u> is increasing. And the costs of short term food crises mitigation will grow, if meaningful investments for more resilient food systems are further delayed."

A broad set of risks to food security needs to be considered, of which climate change is an increasingly important one. Climate change can increase food market volatility by affecting both supply and demand. These risks can ripple out to destabilise food systems, resulting in high and volatile food prices that temporarily limit poor people's food consumption, financial and economic shocks that lead to job loss and credit constraints, and political disruption. This complex system of risks can assume a variety of patterns that could potentially collide in catastrophic combinations.

Studies reviewed included one that found an average of 17% drop in yields of wheat in Africa by 2050 and a 16% drop in maize yields in South Asia under climate change.

Importantly, the impacts of climate change on food go much further than the direct effects of weather on crop harvests. For example, a loss of access to drinking water can cause diarrhoea and so reduce the goodness derived from food. Relatively little research has been done on such indirect effects of <u>climate change</u> on food security, and this review calls for more to be done on these broader aspects of food security.

More information: "Climate Change Impacts on Global Food Security," by T. Wheeler et al. *Science*, 2013.



Provided by University of Reading

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