

Research: Climate impacts could push up food prices by 25 per cent

New studies from Potsdam Institute suggest expanding bio-energy industry would put less upward pressure on food prices than adapting to climate impacts

By James Murray

Climate impacts could lead to a drastic increase in food prices over the coming decades as the agricultural industry struggles to adapt to shifting climatic patterns.

That is the stark warning contained in a series of studies published this week by the Potsdam Institute for Climate Impact Research (PIK) in a Special Issue of the journal *Agricultural Economics*.

The studies acknowledge concerns that a major expansion of bio-energy production could lead to higher food prices as land previously used for food production is switched to produce energy crops. But PIK concluded that "global food markets would be affected much more by unmitigated climate change than by an increased bio-energy demand".

The various models developed by the researchers claim agricultural prices could be about 25 per cent higher in 2050 as a result of direct climate impacts on crop yields compared with a reference scenario where climate change does not occur. In contrast, the expansion of the bioenergy sector as part of a scenario where ambitious emission reduction efforts are undertaken globally are expected to raise food prices by about five per cent.

The journal features three separate studies from PIK, which assess the impact of climate change on demand for cropland, the effect of climate impacts on crop yields, and how second generation biofuels could help decarbonise the transport sector.

Christoph Schmitz, who led the research on cropland, said climate impacts were likely to lead to a drastic increase in demand for cropland.

"We find most models projecting an increase in cropland by 2050 that is more than 50 per cent higher in scenarios with unabated climate change than in those assuming a constant climate," he said in a statement, adding that the increase meant the world would require 320 million hectares instead of about 200 million hectares by 2050 – a difference equal to an area roughly three times the size of Germany.

He warned that with most of the demand for new cropland likely to come in South America and Sub-Saharan Africa, there was a real risk that climate impacts would have a knock-on effect of pushing up greenhouse gas emissions.

"This [demand for additional cropland] could be bad news as in those regions, in order to gain additional cropland, centuries-old rainforests are cut down," he said. "This does not only increase carbon emissions but also harms biodiversity and threatens important ecosystem services."

One of the reasons why demand for cropland is likely to increase was explored in a separate study, which concluded that while climate change may lead to higher agricultural yields in some regions, others will be hit by steep declines in food production.

"Potential climate change impacts on crop yields are strong but vary widely across regions and crops," said lead-author Christoph Müller, adding that for rice, wheat, maize, soybeans and peanuts, the study finds a climate-induced decrease in yields of between 10 per cent and 38 per cent globally by 2050 in a business-as-usual scenario of rising greenhouse-gas emissions, compared with current conditions.

He also predicted that "a more flexible global agricultural trading system would be needed" to ensure that areas that see increases in production can help compensate for those areas that see steep falls in agricultural yields.

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