

# Fewer resources, greater stress, more disasters: Climate change linked to violence among people and societies

Review of 61 accounts concludes that personal disputes and wider civil conflicts increase significantly with weather changes

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A warmer world with more droughts and other climate-related disasters is likely to lead a substantial increase in violent conflict between both individuals and entire societies, a major study has found.

A review of 61 detailed accounts of violence has concluded that personal disputes and wider civil conflicts increase significantly with significant changes to weather patterns, such as increases in temperature and lack of rain, scientists said.

Even rather moderate shifts away from the norm result in marked increases in violence according to the study which concluded that the predicted 2C rise in average global temperatures this century could lead to a 50 per cent increase in major violent conflicts such as civil wars.

The researchers suggest that changes to the climate, and in particular increasing temperatures, are likely to lead to more frequent conflicts over increasingly sparse natural resources, in addition to the physiological stress on individuals caused by hotter weather.

"We want to be careful here. We are not saying that it is inevitable that future warming will mean more conflict. We are saying that past variation in climate - and in particular, past increases in temperature - are associated with more personal and group conflict," said Marshall Burke of the University of California, Berkeley.

"It is definitely possible that future societies will be better at dealing with extreme temperatures than we are today, but we think that it is dangerous to just assume that this will be the case," said Mr Burke, one of the co-author of the study published in the journal *Science*.

The research was based on a search of the academic literature for historical accounts of violent conflict, from personal violence such as murder and assaults to wider conflicts such as riots, ethnic tensions, civil war and even major collapses of civilisations going back thousands of years.

Conflict between groups rather than between individuals showed the strongest link to changes in the climate, the scientists said, with temperature rises being the most common risk factor - all of the 27 studies of modern societies for instance showed a link between hotter weather and greater violence.

"We found that a one standard deviation shift towards hotter conditions causes the likelihood of personal violence to rise 4 per cent and intergroup conflict to rise by 14 per cent," Mr Burke said.

"For a sense of scale, this kind of temperature change is roughly equal to warming an African country by 0.4C for an entire year or warming a United States county by 3C for a given month. These are moderate changes, but they have a sizeable impact on societies," he said.

"Our results hint at a couple factors that might link climate to conflict. The first is economic scarcity. Years of high temperature and extreme rainfall cause a deterioration in economic conditions, particularly in poor countries, and if things get really bad, people who lack other options might decide to take up arms. This seems to be a primary channel linking climate and group conflict in many agrarian societies," he added.

"At the same time, exposure to really hot temperatures also appears to cause a physiological response in how humans deal with each other: people become less trusting, more aggressive, and more violent. It's likely that both of these mechanisms are at work, and we hope that future research will help uncover which mechanism is active in which setting," he added.

Solomon Hsiang of Princeton University, another co-author of the study, said that the link between climate change and violent conflict is clear but as yet there is no clear explanation, a little like the link in the 1950s between lung cancer and smoking, which could only be explained many years later

"Currently, there are several hypotheses explaining why the climate might influence conflict. For example, we know that changes in climate shape prevailing economic conditions, particularly in agrarian economies, and studies suggest that people are more likely to take up arms when the economy deteriorates, perhaps in part to maintain their livelihoods," Mr Hsiang said.

### **How social media fuels holiday inflation**

Parents are being pressured into filling summer holidays with activities for their children by the proliferation of social media, it has been claimed.

According to the Future Foundation think-tank, the ease with which people can "publicise" their holiday photos and other experiences online places pressure on others to keep up.

The authors claimed that their data shows leisure time becoming busier in the past five decades, identifying an increase in the amount of time people spend socialising outside their homes, as well as an increase in the range of activities they take part in.

The emergence of what they called an "experience economy", in which the accumulation of experience is more important than the accumulation of goods, can be partly attributed to the huge surge in mobile phone owners using internet-enabled smartphones, up by 20 per cent since 2010.

The report, entitled *Fifty Years of Summer* and produced for the Nectar loyalty card company, said the way people socialise in the summer has also changed, with 66 per cent saying that barbecuing is the most common way to eat with friends; up from only 6 per cent in the 1960s.

They also identified a greater pressure among young people to prepare for summer, with greater numbers using sun beds, spray tans and exercise regimes to get ready for warm weather.

### **Kevin Rawlinson and Leanora Volpe**