

# Correspondence

## Climate and conflict: risk multipliers

To our knowledge, no one in the field of climate research has suggested that climate change could be the “sole cause” of war, violence, unrest or migration (see *Nature* 554, 275–276; 2018). We argue that viewing climate change instead as a risk multiplier, influencer or co-factor can help to inform rather than inflame this important discussion.

In this way of thinking, environmental and ecological factors interact with social determinants, including those that are economic, demographic and political, to produce phenomena such as migration, conflict and famine (D. C. Bowles *et al. J. R. Soc. Med.* 108, 390–395; 2015). An example you cite found that drought across sub-Saharan Africa in 1990–2011 contributed to an increased risk of rioting because it affected the region’s rain-fed agriculture (C. Almer *et al. J. Environ. Econ. Manage.* 86, 193–209; 2017). This type of agriculture was thus a contributory factor to the likelihood of rioting — a risk that was then magnified by drought.

Including such environmental factors and multipliers will improve understanding of the causes of conflict. Without these, models for studying conflict could become an oversimplified form of social determinism.

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## Climate and conflict: don’t oversimplify

Scientific and methodological challenges make it hard to evaluate links between climate change and human conflict. We find the criticisms made in a review of these challenges (see C. Adams *et al. Nature Clim. Change* 8, 200–203; 2018), as

outlined in your Editorial (*Nature* 554, 275–276; 2018), to be a flawed oversimplification.

One criticism is that the field suffers from a potential sampling bias because research focuses only on regions of violent conflict to draw conclusions about the social and political effects of climate change. In fact, researchers use such cases to identify the variety of factors that produced these conflicts, just as epidemiologists study disease outbreaks to understand the factors that produce epidemics.

Researchers are also accused of ignoring instances of cooperation in favour of conflict. That is not why studying cooperation is important. Comparing triggers of cooperation and conflict helps to understand human responses to environmental stresses.

We agree that research results should not be overgeneralized or inappropriately used to justify causality between climate and conflict. Both practices are rare in our experience, contrary to your implication. Most researchers take pains to describe climate and weather merely as ‘contributing factors’ to some conflicts (see, for example, C. P. Kelley *et al. Proc. Natl Acad. Sci. USA* 112, 3241–3246; 2015).

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## Climate and conflict: no stigma

Your Editorial on sampling bias in studies linking climate change with civil unrest (*Nature* 554, 275–276; 2018) is based on an analysis that in our view provides no evidence for biased results (C. Adams *et al. Nature Clim. Change* 8, 200–203; 2018).

We disagree with your contention that it is “undesirable” to study risk factors for populations with a high likelihood

of conflict on the grounds that it could “stigmatize” these regions as politically unstable.

The same logic would argue against studying risk factors for people who have a high chance of developing cancer for fear of stigmatizing patients. In our view, such recommendations could create bias in the literature by inhibiting research.

Studies of connections between climate and conflict should instead be motivated to identify causes of human suffering so that it can be alleviated (see, for example, M. Burke *et al. Annu. Rev. Econ.* 7, 577–617; 2015). We do not believe that shying away from investigations in this field is an effective path towards this goal.

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## Details matter for lab kit contaminants

We wish to clarify some points related to our reporting of facultative pathogenic bacteria in a commercially available genetic-engineering kit last year (see *Nature* 552, 291; 2017).

*Enterococcus* spp., *Klebsiella pneumoniae* and *Enterobacter* spp. are among the ten microbes most frequently associated with infections in the acute-care wards of European hospitals. For users of the contaminated kits, the risk of infection through broken skin or mucosal contact was considered ‘low’ by the European Centre for Disease Prevention and Control (ECDC) — not ‘very low’, as you wrote. These bacteria were multidrug-resistant and so needed special measures for safe handling.

Regarding your implication that the Bavarian authorities withheld data on the kits, we informed all key people involved, as well as relevant institutions such as the World Health Organization and the ECDC,

about the methods and outcome of our analyses. However, the official results were not made publicly available.

We stress that the regulatory status of biological agents in Germany is unambiguous. In this case, the bacteria were classified as pathogens under the German Protection Against Infection Act and so their import, export, storage and handling needed official permission. The German Genetic Engineering Act allows genetic engineering operations only in approved installations.

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Competing non-financial interests declared; see go.nature.com/2hznref.

## Boost children’s digital intelligence

A survey last year by my organization of 38,000 children across 29 countries (see go.nature.com/2fgrnnp), revealed that more than 50% of 8–12-year-olds were exposed to at least one cyber-related threat such as technology addiction, cyber-bullying or identity theft (see also C. Odgers *Nature* 554, 432–434; 2018). One solution is to teach children how to develop digital intelligence (DQ) — a set of social, emotional and cognitive capabilities that helps them to minimize the risks and pressures of digital media and to maximize its opportunities.

At Singapore’s award-winning DQ Institute, we work with governments and international partners such as the World Economic Forum and the Organisation for Economic Co-operation and Development to improve digital education, culture and innovation through cross-sector collaboration, global dialogue and big data research (www.dqinstitute.org).

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