

CLIMATE POLICY

Demand-side green action

Clim. Policy <http://doi.org/czhv> (2018)



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Effective climate policy requires a multi-pronged strategy that reduces greenhouse gases at the point of emissions and simultaneously leverages consumer-orientated behaviour change. Although these green actions are widely studied, a comprehensive accounting of their potential emissions impacts is a challenging task.

Daniel Moran of the Norwegian University of Science and Technology and colleagues with the European Union Carbon-CAP project use the existing literature on demand-side initiatives to parameterize a multi-region input–output model, enabling them to assess the national-level impacts of household action. The results show that if all 90 of the initiatives considered were adopted, the EU could reduce its carbon footprint by

as much as 25% and its territorial emissions by 30%. Initiatives addressing transport and food yielded the largest reductions in emissions. However, a large number of actions contributed very little.

Notably, the authors characterize their findings as estimating an upper bound on the potential impact of consumer mitigation options, reaffirming that there is no silver-bullet with respect to meeting the Paris climate goals. AY

<https://doi.org/10.1038/s41558-019-0408-x>

AGRICULTURE

Declining yield resilience

Proc. Natl Acad. Sci. USA **116**, 123–128 (2019)

Providing food for an extra two to three billion people in a changing climate represents a major challenge for agriculture over the coming decades. One way to maintain yields in the face of increasing climate variability is to utilize a set of crop cultivars that exhibit different responses to climatic conditions. This response diversity confers a degree of resilience to climate change and variability.

Helena Kahiluoto from Lappeenranta University of Technology (LUT), Finland, and co-workers investigate the response diversity of wheat (991 cultivars of winter and spring wheat and durum wheat) from cultivar trials across nine European countries in the period 1991–2014. They find some regional differences in yield responses, but the overall pattern is towards a decline in the response diversity of farmed

wheat in most European countries after 2002–2009. This suggests that breeding programmes and cultivar-selection practices are not effectively preparing wheat crops for the increasing climatic variability expected to accompany ongoing climate change. AB

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ATMOSPHERIC HAZARDS

More powerful tornadoes

Geophys. Res. Lett. <http://doi.org/gfq92b> (2018)



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Observations reveal an increase in the number of days with multiple tornadoes in the United States, potentially exacerbating their economic impacts. However, quantifying the effects of anthropogenic climate change on severe storm hazards has been constrained by inadequate data and natural variability in tornado occurrence. James Elsner and colleagues from Florida State University, United States, use a hierarchical regression model — which controls for tornado variability over various timescales — to examine changes in US tornado power (or energy dissipated) from 1994 to 2016.

In addition to the recent increase in tornado days, tornado power is found to have risen by 5.5% per year, highlighting a possible relationship between these two attributes. A proportion of this upward power trend is believed to be linked to regional changes in the storm environment, particularly a concurrent increase in convective available potential energy and vertical wind shear, alongside enhanced convective stability; the authors, however, emphasize that these changes explain only a minor component of the trends in tornado power. Further work is therefore required to more fully understand tornado variability and projections under anthropogenic warming. GS

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CLIMATE ADVOCACY

To engage or not to engage?

Climatic Change <https://doi.org/10.1007/s10584-018-2339-3> (2018)

Although scientists have valuable knowledge relevant to tackling important issues, many resist calls to engage the public for fear that being labelled as an advocate will undermine their scientific credibility. Ambivalence over advocacy may be especially problematic for climate science, which is highly politicized in the United States and thus presents more risks associated with becoming a public voice. But everyday discussions of climate science are needed to raise public understanding and awareness.

Maxwell Boykoff and David Oonk from University of Colorado Boulder surveyed US-based academic researchers and scholars drawn from societies that support natural and social scientists, such as the American Geophysical Union. Respondents generally agreed that advocacy for evidence-based climate science should not be criticized, but social scientists were more likely to take this position than natural scientists. However, social scientists were also less likely to agree that academic researchers should advocate for specific policies. Younger respondents and social scientists were more likely to agree that those with smaller known carbon footprints are more persuasive advocates. A failure to distinguish between promoting evidence-based science versus promoting a particular policy may explain differing views on the acceptability of climate advocacy. JR

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