The latest in climate change attribution and the law

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Once an impact has been attributed to anthropogenic climate change, it can also be attributed to specific emission sources on a proportional basis. Credit: Pixabay

The evolving field of climate change attribution science plays a critical role in shaping our understanding of how humans are affecting the global

climate system, and in informing discussions about responsibility for climate change impacts. Attribution science provides the evidence establishing that anthropogenic climate change is real, that it is here, and that scientific predictions of future change should be taken seriously. Confronted with this growing body of research, courts, policy-makers, and private actors are now grappling with critical legal questions, such as whether governments are doing enough to reduce emissions and adapt to climate risks, and whether corporations can be held liable for their contributions to the problem.

Several years ago, Sabin Center executive director Michael Burger and senior fellow Jessica Wentz teamed up with Radley Horton, a climate scientist and research professor at the Lamont-Doherty Earth Observatory, to assess the state-of-the-art in attribution science and investigate how this field is shaping discussions about legal rights and obligations pertaining to climate change. This project has culminated in a new article, "The Law and Science of Climate Change Attribution," published by the *Columbia Journal of Environmental Law*. The article, weighing in at 185 law journal pages, provides a comprehensive overview of attribution research and its application in legal settings. An executive summary is available here.

Some of the key findings from our research include:

- The existing body of detection and attribution research is sufficiently robust to support the adjudication of certain types of legal disputes. But there are also complicating factors which can make it difficult to identify a clear causal chain between a particular emission source and specific harms or impacts associated with climate change. Ultimately, the extent to which the science can support legal claims will depend on many factors, such as the nature of the claim, the identities of the plaintiffs and defendants, and the nature of the alleged injuries.

- Many observed physical impacts such as sea level rise, melting permafrost, and ocean acidification can be attributed to anthropogenic climate change with high confidence. Consensus confidence levels are currently lower for other impacts, such as extreme events, public health outcomes, economic losses, and ecosystem degradation. There is a growing body of extreme event and impact attribution studies finding a causal connection between impacts such as heat-related mortality and anthropogenic influence on climate change.
- Once an impact has been attributed to anthropogenic climate change, it can also be attributed to specific emission sources on a proportional basis. This calculation may involve estimating the proportional contribution of the source to global greenhouse gas emissions, and using that to extrapolate the proportional contribution of the source to the impact. However, source attribution is not a purely objective quantitative exercise. There are normative questions implicated in the process of determining who is responsible for what emissions.
- Attribution science plays an important role in lawsuits seeking to compel national governments to take action on climate change. In several foreign cases, plaintiffs have successfully used attribution science to demonstrate that a government's failure to regulate greenhouse gas emissions at adequate levels endangered the public health and welfare of citizens within the country, and thus the government had violated its duty of care to its citizens.
- Lawsuits seeking to hold corporations liable for their contribution to climate change have met with jurisdictional, procedural and other obstacles, and to date have not faltered due to any limitations in the science. For example, some U.S. courts have held that climate-related claims are either displaced by the Clean Air Act or should be handled by other branches of government based on separation of powers principles. The science may be strong enough to support a finding of liability if

plaintiffs in pending and future cases overcome these initial hurdles and if judges apply traditional common law principles when evaluating the merits of these claims.

- The scientific community can support applications of attribution research, such as the use of this research to inform loss and damage negotiations and judicial determinations of liability for climate change impacts. Such support may involve continuing to expand and improve upon existing attribution research, including in currently underrepresented geographic regions and with regards to impacts experienced in the present; communicating findings clearly and in an accessible format; engaging with stakeholders to help them understand findings; and linking individual studies to other research that helps to flesh out the causal chain from emissions to impact. Policymakers, judges, and litigants can also improve their understanding of the science and expand the analytical approaches they use to evaluate the legal and normative implications of the science when making judicial or policy determinations.

This article is a launching point rather than a conclusion to our work. We intend to build on its foundation with further research, publications, and educational materials tracking new developments in the field and addressing emerging questions.

More information: Burger, M., et al (2020). The Law and Science of Climate Change Attribution. *Columbia Journal of Environmental Law*, 45(1). doi.org/10.7916/cjel.v45i1.4730 journals.library.columbia.edu/… el/article/view/4730

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