

# The energy transition needs to be climate-proofed

September 8 2022, by Corey Lesk and Kai Kornhuber

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Solar panels damaged by river overflow from a typhoon in Japan. Credit: [Syced](#) /Wikimedia Commons

Record-breaking weather events are becoming more common, costly, and extreme. Not only do these extreme weather events destroy lives and homes. Less talked about is how they can also disrupt the deployment of renewable energy infrastructure that's vital to preventing climate conditions from getting even worse.

This feedback loop—where [greenhouse gas emissions](#) cause more [extreme weather](#), stalling progress on clean energy infrastructure and leading to more emissions—is rarely taken into account in plans for the energy transition and [disaster management](#). In a recent perspective piece published in *Environmental Research: Climate*, we discuss how the expected increase in extremes might affect measures to evolve from the current fossil fuel–based energy sector to a more sustainable one. We also offer some potential solutions.

As an example of how climate change could delay the energy transition, imagine trying to decarbonize cities on the West Coast. The best wind power resource is located in the Midwest, so you need to build transmission lines across a very active fire zone to reach the West Coast cities. In addition, the Midwest is prone to damaging floods that are likely to worsen with warming, so there are simultaneous disruptors to overcome—plus the political challenge of having large federal infrastructure projects delayed.

In another scenario, one could imagine a hurricane knocking out oil production in the Gulf Coast; the resulting reverberations in the energy system could result in efforts to keep fossil fuels cheap as a quick and easy fix during recovery. We're seeing a similar scenario play out now: As the crisis in Ukraine interrupts natural gas supplies, Germany is focused on keeping gas prices low and essentially providing a huge stimulus package for fossil fuels.

Why aren't we already having discussions about [climate change](#)'s impacts

on the energy transition? Infrastructure planners in some sectors sometimes do not consider the full risks posed by climate extremes. Even among academics, the experts concerned with financing and engineering renewable energy are different from those who look at extreme weather projections and impacts, and those two groups are often not in the same room.

In our paper, we lay out three ways to overcome these challenges and break the [feedback loop](#).

One solution is to incorporate climate adaptation into strategies that reduce carbon emissions, including renewable energy deployment. Increasing the resiliency of these systems will likely make them more cost-effective in the long-term as well.

After Hurricane Maria hit Puerto Rico and knocked out [power supply](#) for months, a policy financed the deployment of decentralized [solar-based power systems](#) that are specifically designed to be stowable during hurricanes so that they don't get blown away. This is a good example of how the transition could be designed to be resilient to extreme climate events.

A second solution is for governments to respond well to disasters and communicate their strategies. When communities feel they're not being properly supported during the disaster recovery process, political backlash against funding for renewables results. We saw this in the February 2021 [cold snap in Texas](#). Snow, ice, and frigid temperatures caused natural gas power plants to fail. Lack of access to heat and water disrupted many peoples' lives, and as dissatisfaction with disaster preparedness and response mounted, the blame turned to frozen wind and solar equipment—even though there was no evidence that this equipment was at fault.

To avoid this type of conflict in the future, both the energy transition and disaster response need to be well-funded. There are promising ways of doing this, including by taxing carbon. This not only incentivizes the economy to wean itself off fossil fuels, but the dividends could be used for [disaster preparedness](#) and helping people who lose their jobs because of the [energy transition](#), as well as other measures to enhance equity and improve public acceptance of the carbon tax.

The third solution we propose is to support research and communication to improve climate literacy, future projections of extreme weather, and preparedness for complex interactions of multiple extreme events. Students need to be learning about climate trends and impacts before they make their career choices, so that it's on their radar when they become [urban planners](#) or engineers, for example. Disaster preparedness teams need realistic estimates on future extremes that have traditionally been underestimated by climate models.

We also need better coordination between academic silos. More than ever, the methods and insights of climate scientists, engineers, and urban sociologists need to fit together in order to address the whole scale of the climate crisis and all of the factors going on. Our aim is to draw attention to that need, and the need for this kind of interdisciplinary work to be funded.

This is one area where the Columbia Climate School offers potential. One of the key goals of the school is to gather different types of experts into the same classrooms and community, to produce interdisciplinary scientists and practitioners. Fitting disciplines together will require work, and for members of the school to hold leadership accountable to addressing these interdisciplinary needs.

The climate crisis concerns all disciplines. We'll have better outcomes by teaching all of the prongs of the issue together.

**More information:** Corey Lesk et al, An effective clean energy transition must anticipate growing climate disruptions, *Environmental Research: Climate* (2022). [DOI: 10.1088/2752-5295/ac76db](https://doi.org/10.1088/2752-5295/ac76db)

*This story is republished courtesy of Earth Institute, Columbia University*  
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Provided by Earth Institute at Columbia University

Citation: The energy transition needs to be climate-proofed (2022, September 8) retrieved 8 May 2024 from <https://phys.org/news/2022-09-energy-transition-climate-proofed.html>

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