

GUEST ESSAY

I'm a Climate Scientist. I'm Not Screaming Into the Void Anymore.

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By Kate Marvel

Dr. Marvel, a climate scientist at the environmental nonprofit Project Drawdown, was a lead author on the Fifth National Climate Assessment.

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Two and a half years ago, when I was asked to help write the most authoritative report on climate change in the United States, I hesitated. Did we *really* need another warning of the dire consequences of climate change in this country? The answer, legally, was yes: Congress mandates that the National Climate Assessment be updated every four years or so. But after four previous assessments and six United Nations reports since 1990, I was skeptical that what we needed to address climate change was yet another report.

In the end, I said yes, but reluctantly. Frankly, I was sick of admonishing people about how bad things could get. Scientists have raised the alarm over and over again, and still the temperature rises. Extreme events like heat waves, floods and droughts are becoming more severe and frequent, exactly as we predicted they would. We were proved right. It didn't seem to matter.

Our report, which was released on Tuesday, contains more dire warnings. There are plenty of new reasons for despair. Thanks to recent scientific advances, we can now link climate change to specific extreme weather disasters, and we have a better understanding of how the feedback loops in the climate system can make warming even worse. We can also now more confidently forecast catastrophic outcomes if global emissions continue on their current trajectory. But to me, the most surprising new finding in the Fifth National Climate Assessment is this: There has been genuine progress, too.

I'm used to mind-boggling numbers, and there are many of them in this report. Human beings have put about 1.6 trillion tons of carbon in the atmosphere since the Industrial Revolution — more than the weight of every living thing on Earth combined. But as we wrote the report, I learned other, even more mind-boggling numbers. In the last decade, the cost of wind energy has declined by 70 percent and solar has declined 90 percent. Renewables now make up 80 percent of new electricity generation capacity. Our country's greenhouse gas emissions are falling, even as our G.D.P. and population grow.

In the report, we were tasked with projecting future climate change. We showed what the United States would look like if the world warms by 2 degrees Celsius. It wasn't a pretty picture: more heat waves, more uncomfortably hot nights, more downpours, more droughts. If greenhouse emissions continue to rise, we could reach that point in the next couple of decades. If they fall a little, maybe we can stave it off until the middle of the century. But our findings also offered a glimmer of hope: If emissions fall dramatically, as the report suggested they could, we may never reach 2 degrees Celsius at all. For the first time in my career, I felt something strange: optimism. And that simple realization was enough to convince me that releasing yet another climate report was worthwhile.

Something has changed in the United States, and not just the climate. State, local and tribal governments all around the country have begun to take action. Some politicians now actually campaign on climate change, instead of ignoring or lying about it. Congress passed federal climate legislation — something I'd long regarded as impossible — in 2022 as we turned in

the first draft.

And while the report stresses the urgency of limiting warming to prevent terrible risks, it has a new message, too: We can do this. We now know how to make the dramatic emissions cuts we'd need to limit warming, and it's very possible to do this in a way that's sustainable, healthy and fair. The conversation has moved on, and the role of scientists has changed. We're not just warning of danger anymore. We're showing the way to safety.

I was wrong about those previous reports: They did matter, after all. While climate scientists were warning the world of disaster, a small army of scientists, engineers, policymakers and others were getting to work. These first responders have helped move us toward our climate goals. Our warnings did their job.

To limit global warming, we need many more people to get on board. This will be hard: It will require large-scale changes in infrastructure and behavior as well as removing carbon from the atmosphere. And not everyone is on board yet. In particular, the fossil fuel industry is still ignoring the science. Oil, gas and coal companies have already made plans for infrastructure that, if used as intended, would cause the world to blow past the Paris Agreement target of 1.5 degrees Celsius in the next few decades.

To prevent this, we need to reach those who haven't yet been moved by our warnings. I'm not talking about the fossil fuel industry here; nor do I particularly care about winning over the small but noisy group of committed climate deniers. But I believe we can reach the many people whose eyes glaze over when they hear yet another dire warning or see another report like the one we just published.

The reason is that now, we have a better story to tell. The evidence is clear: Responding to climate change will not only create a better world for our children and grandchildren, but it will also make the world better for us right now.

Eliminating the sources of greenhouse gas emissions will make our air and water cleaner, our economy stronger and our quality of life better. It could save hundreds of thousands or even millions of lives across the country through air quality benefits alone. Using land more wisely can both limit climate change and protect biodiversity. Climate change most strongly affects communities that get a raw deal in our society: people with low incomes, people of color, children and the elderly. And climate action can be an opportunity to redress legacies of racism, neglect and injustice.

I could still tell you scary stories about a future ravaged by climate change, and they'd be true, at least on the trajectory we're currently on. But it's also true that we have a once-in-human-history chance not only to prevent the worst effects but also to make the world better right now. It would be a shame to squander this opportunity. So I don't just want to talk about the problems anymore. I want to talk about the solutions. Consider this your last warning from me.

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