



ARIZONA STATE UNIVERSITY

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# Time for the G7 to Lead on Climate Policy

BY THOMAS F. STOCKER

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*Wealthy nations have the opportunity and responsibility to lead global efforts to decarbonize and avoid the worst effects of a warming climate.*

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As the leaders of the wealthy Group of Seven (G7) nations meet this week in Germany, I'd like to repeat advice that I recently gave at the Science7 Dialogue Forum in Berlin: it is time for the G7 to lead on decarbonization.

The group, which includes the United States, Canada, France, Germany, Italy, Japan, and the United Kingdom, has long held this ambition. In 2016, not long after the Paris Agreement was signed, G7 leaders said: "We commit to take the lead by early, transparent and robust implementation of our nationally determined contributions, and promoting increased ambition over time."

The Paris Agreement, reached in 2015 after more than 20 years of negotiations, was a historic milestone. The goal was to keep global warming to well below 2°C warming relative to preindustrial temperatures, and the declared ambition was to limit the warming to 1.5°C. The Paris Agreement generated hope that humankind would be able, probably for the first time, to take decisions and actions to safeguard the existence of our life-supporting system, our planet.

Today, seven years later, the atmospheric concentration of the most important greenhouse gas, carbon dioxide, is higher than ever in human history, and it continues to rise. The most recent Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) describes the trajectory in unprecedented detail, observing that the atmospheric concentration of carbon dioxide is now higher than it has been in the last 2 million years, and the rate of global warming is the highest in at least the last 2,000 years.

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The report details the damage this is causing: how extreme events such as heat waves have increased in intensity and frequency and now affect most regions of the world; how sea level rise has accelerated; and how the melting of glaciers will degrade water resources on which millions of people depend. The mass loss of Greenland and Antarctica has accelerated, the ocean is acidifying, and marine ecosystems have increasing difficulties adapting to multiple anthropogenic stressors.

But the evidence of rapidly changing climate conditions around the world and the messages of successive IPCC assessments since 1990 have not yet led to hard policy decisions and actions. Preliminary analysis suggests that anthropogenic carbon dioxide emissions in 2021 have fully rebounded after their pandemic-related temporary reduction in 2020. We therefore must ask the inconvenient question of whether the science-based warming limits of the Paris Agreement are still within reach.

Global mean warming is proportional to the total amount of emitted carbon dioxide by anthropogenic sources since the Industrial Revolution. In short, the more humans emit, the warmer it gets. The policy relevance of this finding is immediately evident: any temperature target can be directly converted into tons of carbon—a global carbon budget that humanity must stay within.

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It turns out that fossil fuel-hungry humanity has almost exhausted the remaining carbon budget for 1.5°C warming. In fact, if we ignore the current cooling effect of aerosols that are also emitted during the burning process, the world has already hit the 1.5°C warming limit. Aerosol emissions will likely be eliminated before long, because of the health problems caused by high aerosol loads when combined with global heating. The door to meet climate targets is rapidly closing.

Rapid action is indispensable if less ambitious climate targets, such as the 2°C target, should not also be lost. Calculations show that with every decade of inaction, about 0.4°C of increased warming becomes built in. This means that by around 2035, the climate target of 2°C will have become as unachievable as the 1.5°C target today. With every year of talking about emissions reductions but not acting, our options to confront global warming diminish and our chances to avoid the worst damages fade away.

The G7 should focus on providing the leadership that is required to seize the economic opportunities that offer themselves in decarbonizing the world's economy. This task has the scale of an industrial revolution: similar to the revolutions that were driven by mechanization, electrification, and digitalization, decarbonization could generate new jobs, new products, new wealth, and new values for society.

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The G7 partner countries must become the champions of this vision of the future. They have the political power, the democratic instruments, and the financial basis to assume leadership on decarbonization. The G7 nations not only bear more than a third of the historical responsibility of the world's emissions of carbon dioxide, but they also share about 30% of all countries' gross domestic product. This is a gigantic financial and political power that could be applied to address the climate challenge. Furthermore, the excellent research and development base available to the G7 strengthens the group's ability to take leadership in decarbonizing the world. Leadership is particularly powerful when it is based on the combination of democracy, science, and innovation.

But so far, the G7 countries have not capitalized on these outstanding assets to confront anthropogenic climate change. It is now high time to do this and lead the way, lest the world misses the climate targets that the international community declared in the Paris Agreement.

I see seven priorities of action to affirm this leadership:

- Put a price on carbon emissions so that polluters pay for their emissions;
- Coordinate national and international laws to concentrate resources and limit cheating;

- Take actions to reduce resource consumption by promoting reusable, recyclable, and long-lived goods and technologies;
- Accelerate the invention and development of technology for decarbonization;
- Replace and renew infrastructure and buildings to make them fit for the post-fossil fuel era;
- Invest in the education of the next generation of scientists, engineers, policymakers, and citizens; and
- Make policy decisions informed by scientific research that give appropriate weight to long-term well-being over short-term considerations.

The G7 has before it a chance to lead the implementation of these actions at the local, national, and global levels, avoiding the major disruptions and conflicts that are sure to come with further heating.

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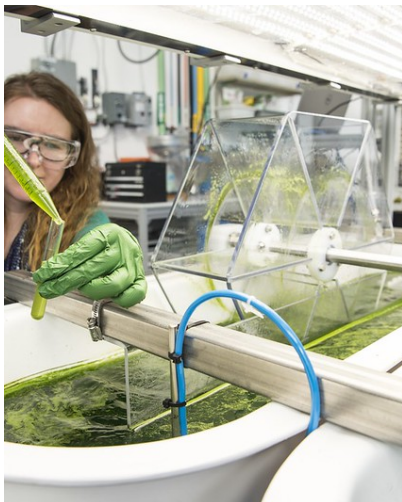
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