

Tip the planet: Tackling climate change with small, sensitive interventions

April 15 2019, by Matthew Carl Ives, Penny Mealy And Thom Wetzer



Credit: Markus Spiske from Pexels

Search online for "climate change" and "tipping points" and you'll find some scary results. [Melting ice sheets](#), the collapse of the [Atlantic thermohaline circulation](#) , [the permafrost methane "time bomb"](#) and the

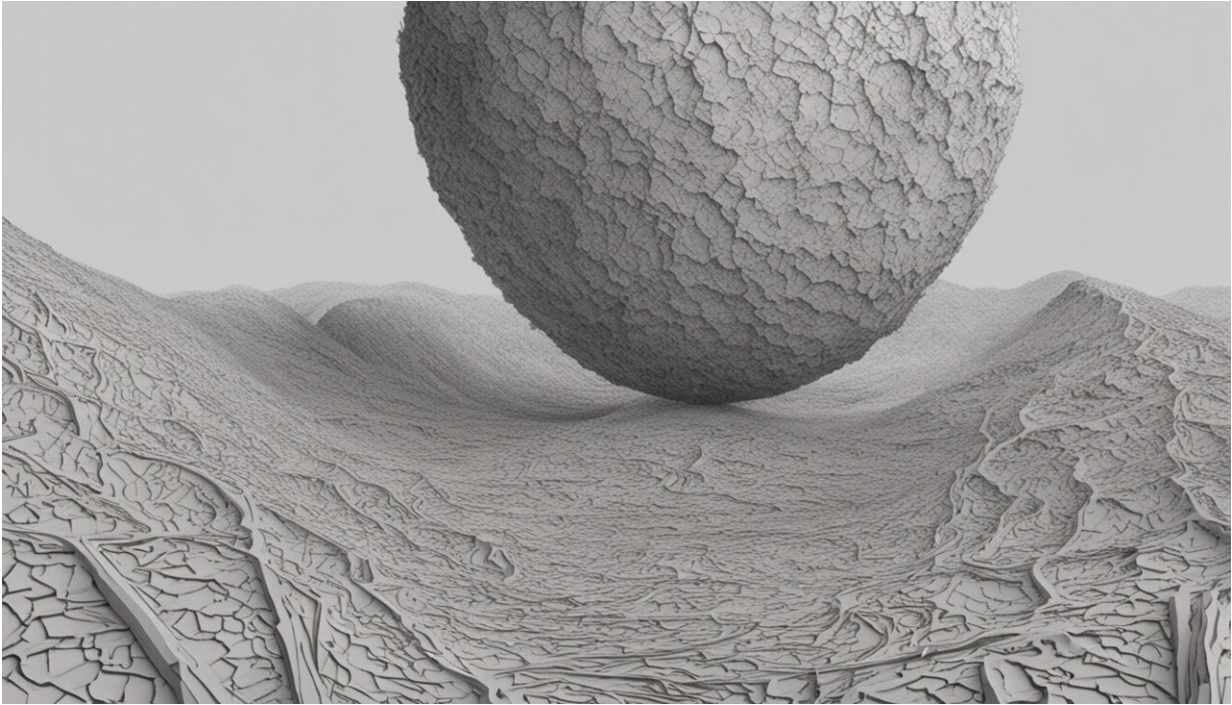
[die-back of the Amazon rainforest](#) threaten to [exacerbate the climate crisis](#) and send global warming [spiralling out of control](#).

But what if we could leverage similar tipping point dynamics to solve the climate problem? Like physical or environmental systems, socioeconomic and political systems can also exhibit nonlinear dynamics. Memes on the internet can go viral, loan defaults can cascade into [financial crises](#), and public opinion can shift in rapid and radical ways.

In an article just out in [Science](#), we outline a new approach to [climate change](#) that tries to find areas in socioeconomic and political systems that are "sensitive" – where modest but well-timed interventions could generate outsized impacts and accelerate progress towards a post-carbon world.

Sensitive Intervention Points (SIPs)

These "Sensitive Intervention Points" – or SIPs – could trigger self-reinforcing [feedback loops](#), which can amplify [small changes](#) to produce outsized effects. Take, for example, solar photovoltaics. As more solar panels are produced and deployed, costs fall through "learning-by-doing" as practice, market testing and incremental innovation make the whole process cheaper.



Credit: AI-generated image ([disclaimer](#))

Cost reductions lead to greater demand, further deployment, more learning-by-doing, more cost reductions and so on. However, the spread of renewables isn't just dependent on technology and cost improvements. Social dynamics can also play a major role. As people observe their neighbours installing rooftop solar panels they might be more inclined to do so themselves. This effect could cause a shift in cultural and social norms.

Financial markets are another key area where SIPs could help accelerate the transition to post-carbon societies. Many companies are currently failing to disclose and account for climate risks associated with assets on their balance sheet. Climate risk can entail physical risks, caused by extreme weather or flooding. They can also entail the risk of assets such as fossil fuel reserves becoming stranded as economies transition to limit

warming to 1.5°C or 2°C, when such resources are no longer valuable.

Most of the world's current fossil fuel reserves [can't be used](#) if the world is to limit warming and they become [effectively worthless](#) once this is acknowledged. By not accounting for these risks to fossil fuel assets, high-emission industries are effectively given an advantage over low-carbon alternatives that shouldn't exist. Relatively modest changes to accounting and disclosure guidelines could make a significant difference.

If companies are required to disclose information about the [climate risks](#) associated with their assets – and if such disclosure is [consistent and comparable across companies](#) – investors can make more informed decisions and the implicit subsidy enjoyed by high-emission industries is likely to rapidly disappear.

Opportunities for triggering SIPs in a given system can also change over time. Sometimes "windows of opportunity" open up, where very unlikely changes become possible. A key example in the UK was the political climate in 2007-2008 which enabled the 2008 UK Climate Change Act to pass with near unanimous support. This national legislation was the first of its kind and committed the UK to reducing greenhouse gas emissions by 80% relative to 1990 levels by 2050.

The act also created a regular ratcheting cycle which encourages more ambitious future climate action. Since 2008, emissions in the UK have [fallen dramatically](#). However, the UK Climate Change Act's influence beyond the UK is also significant as it encouraged similar legislation in other countries, including the Paris Agreement, which contains the same self-reinforcing ratcheting mechanism.

Using SIPs for rapid change

Thinking about SIPs in policy and business could accelerate the post-carbon transition – but much work lies ahead. The first step is to systematically identify potential SIPs and the mechanisms by which they can be amplified.

Unfortunately, traditional economic models commonly used to evaluate climate policy are [poorly equipped to do this](#), but new analytical methods are [increasingly being used](#) in [policy](#).

These new methods could provide more accurate insights into the costs, benefits and possibilities of SIPs for addressing climate change. As SIPs could be present in all spheres of life, experts in social and natural sciences will need to work together.

The window to avert catastrophic [climate](#) change is closing fast, but with intelligent interventions at sensitive points in the system, we believe success is still possible. Since the stakes are so high – and the time frame so limited – it is not possible to chase every seemingly promising idea. But with a smart, strategic approach to unleashing feedback mechanisms and exploiting critical windows of opportunity in systems that are ripe for change, we may just be able to tip the planet onto a post-carbon trajectory.

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