Earth Day 2021: Climate change 'tipping points' might not be the end of the world after all, report says

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Highlight: Gradual pace of environmental decline could give us more time to avert disaster in rare glimmer of hope amid state of emergency, reports Joe Sommerlad

Body

Catastrophic events considered climate change "tipping points" like the melting of the polar ice caps or the dieback of the Amazon rainforest can still be averted if world governments act quickly enough to stop global warming , new research indicates.

A study published in the academic journal Nature concludes that these thresholds, long regarded as points of no return, could in fact only be "temporarily exceeded" without prompting permanent shifts as more gradual declines grant us more time to arrest their progress.

Researchers from the University of Exeter and the UK Centre for Ecology and Hydrology (UKCEH) argue the time available to act against such disasters depends on the extent of global heating and the timescale involved in each individual tipping point event, a rare glimmer of hope amid the doomsaying, pessimism and resignation that surrounds the climate emergency.

"The more extreme the warming, the less time we would have to prevent tipping points," said lead author Dr Paul Ritchie of Exeter's Global Systems Institute and Department of Mathematics.

"This is especially true for fast-onset tipping points like Amazon forest dieback and disruption to monsoons, where irreversible change could take place in a matter of decades.

"Slow-onset tipping points take place over a timescale of many centuries and -depending on the level of warming - this would give us more time to act."

Joe Clarke, likewise of the University of Exeter, said: "Fortunately, the tipping points that are believed to be closest are slow-onset tipping points. This may give us a lifeline to avoid dangerous climate change."

The urgency behind the signing of the Paris climate accord was prompted by fear of tipping point events like the melting of Greenland's ice sheet, fears that saw world leaders come together to sign a pledge to keep global warming below 1.5C by reining in carbon emissions , pollution and other practices harmful to the natural world.

"However, current rates of warming make it almost inevitable that we will exceed that level," ***said*** Professor Peter Cox of the 1.5C figure, lamenting that ***not*** enough is being done.

"It is widely assumed that this means we are now committed to suffering these ***tipping*** events," Dr Ritchie added.

"We show that this conventional wisdom may be flawed, especially for slow-onset ***tipping*** elements such as a collapse of the Atlantic Meridional Overturning Circulation or the melting of ice sheets."

The "time to act" was calculated as the time taken to reverse warming and stabilise at 1.5C above pre-industrial levels.

"Ideally, we will ***not*** cross ***tipping point*** thresholds, but this gives hope we may be able to pull back from danger if needed," ***said*** Dr Chris Huntingford of UKCEH.

The news is timely given that this year's ***Earth Day*** takes place on Thursday, when ***all*** eyes will be on US president *Joe Biden* , who is holding an online virtual summit from the White House in the hope of securing bold new commitments to better environmental practices from his fellow ***world*** leaders, particularly *China* , the ***world***'s biggest polluter.

Responding to the Nature ***report***, Professor Myles Allen of the University of Oxford, was sceptical: "The paper suggests that a peak global warming of 4C would be in the 'safe zone' for the global ***climate tipping points*** if temperatures were subsequently reduced to 1.5C within 100 years. Reducing global temperatures by 2.5C in 100 years would require over 6 trillion tonnes of carbon dioxide to be removed from the atmosphere over the course of a century, which is 50 per cent faster than we are currently putting it in."

For Professor Andrew Shepherd of the University of Leeds, the findings provided a reminder of "how easily our ***climate*** can be ***tipped*** into new states".

"Parts of ***earth***'s cryosphere have already ***changed*** beyond recognition in our lifetime - for example the succession of Antarctic Peninsula ice shelves that have collapsed ***after*** surviving for thousands of years and the glacier imbalance that has spread across a quarter of West Antarctica since the 1990's," he ***said***.

"The problem is that we still don't know how to reliably predict these abrupt ***changes***, and so there is work to be done before we can be sure when ***tipping points might*** be crossed in future and indeed whether they can or cannot be easily reversed."

Professor Hannah Cloke of the University of Reading commented: "Taking action to slow and reverse global warming can only be a good thing. Although this study is encouraging in suggesting we can avoid irreversible damage to the planet, we should ***not*** look at ***climate tipping points*** like a see saw.

"Adequate action relies on governments around the ***world*** making genuine commitments to urgently reduce carbon emissions, and making ***changes*** to the way of life we have grown accustomed to."

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