

Pivotal moment for humanity as tipping point threats and opportunities accelerate, report warns

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An acceleration in threats from Earth system tipping points, which occur when small changes spark often rapid and irreversible transformations,

has set humanity on a disastrous trajectory, a new report shows.

Based on an assessment of 26 negative Earth system tipping points, the report says "business as usual" is no longer possible—with rapid changes to nature and societies already happening, and more coming.

The most comprehensive assessment of tipping points ever conducted, [The Global Tipping Points Report](#) was produced by an international team of more than 200 researchers, including experts from Cardiff University, and coordinated by the University of Exeter in partnership with Bezos Earth Fund.

The authors claim current global governance is inadequate for the scale of the challenge of fossil fuel phase out and growth of zero-carbon solutions, offering six key recommendations to change course fast:

- Phase out fossil fuels and land-use emissions now, stopping them well before 2050
- Strengthen adaptation and "loss and damage" governance, recognizing inequality between and within nations
- Include tipping points in the world's climate "inventory" the Global Stocktake and Nationally Determined Contributions which measures each country's efforts to tackle climate change
- Coordinate policy efforts to trigger positive tipping points
- Convene an urgent global summit on tipping points
- The research team supports calls for an IPCC Special Report on tipping points to deepen knowledge and understanding

Professor Caroline Lear, one of the report's co-authors from Cardiff University's School of Earth and Environmental Sciences, said, "Our research shows that in the past, even small natural changes in greenhouse gas concentrations had a domino effect changing different parts of our planet, from sea level to entire ecosystems.

"Without more significant climate action we expect to see a similar [domino effect](#) from the much faster changes in greenhouse gas concentrations caused by burning [fossil fuels](#)."

With [global warming](#) now on course to breach 1.5°C, the report notes at least five Earth system tipping points are likely to be triggered—including the collapse of major ice sheets and widespread mortality of warm-water coral reefs.

As Earth system tipping points multiply, there is a risk of catastrophic, global-scale loss of capacity to grow staple crops. Without [urgent action](#) to halt the climate and ecological crisis, societies will be overwhelmed as the natural world comes apart, the authors warn.

The report also explores alternative, emergency global action that could harness positive tipping points and steer a path towards a thriving, sustainable future.

It lays out a blueprint for doing this, and says bold, coordinated policies could trigger positive tipping points across multiple sectors including energy, transport, and food.

Professor Lear added, "This report contains a message of hope—climate-friendly and fair policies could start a chain of events that help us avert the worst impacts of climate change while helping societies across the planet."

According to the authors, a cascade of positive tipping points would save millions of lives, billions of people from hardship, trillions of dollars in climate-related damage, and begin restoring the [natural world](#) upon which we all depend.

Professor Stephen Barker, another of the report's co-authors from

Cardiff University's School of Earth and Environmental Sciences, added, "Not all tipping points are bad. If we make wise decisions now, they could help to steer us in the right direction.

"For example, creating national strategies on solar power generation and storage will encourage investment to increase capacity and ultimately bring down costs, leading to more renewables.

"We cannot wait for new technologies to emerge solely through private enterprise. We need to legislate with foresight and responsibility."

"Tipping points in the Anthropocene," a [special issue](#) of the journal *Earth System Dynamics*, includes parts of the Global Tipping Points Report.

More information: The Global Tipping Points Report. global-tipping-points.org/

Provided by Cardiff University

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