



‘Tipping points’ lead to irreversible shifts - climate experts

The most significant changes can be sudden, not gradual, if the circumstances are right. Horizon Magazine listened in on a recent discussion between leading climate change scientists on the role of 'tipping points' in the climate transition.

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A [tipping point](#) is defined as a small intervention that leads to major long-term consequences which are hard to reverse.

Without immediate and deep emissions reductions across all sectors, limiting global warming to 1.5 °C will be impossible, the [Intergovernmental Panel on Climate Change \(IPCC\)](#) warned in April. That means global emissions must peak before 2025, and be reduced 43% by 2030, the UN body said.

This question was examined during a virtual training conference on 7 June 2022 entitled “Tipping points – Threat and Opportunity” where European policy officers, researchers and academics heard about the power of

negative and positive tipping points in the climate change driven transformation. The keynote speakers were Profs Tim Lenton and Johan Rockström.

From individuals flying less to the energy sector abandoning fossil fuels, major changes are needed to reduce greenhouse gas emissions fast enough to prevent climate disaster.

Earth instability

There is evidence of instability in many of the Earth's major systems, including the Amazon rainforest, the summer ice cover in the Arctic, and the West Antarctica ice shelf, said Johan Rockström, director of the Potsdam Institute for Climate Impact Research, in his keynote address. The sustainability expert and Professor in Earth System Science at the University of Potsdam in Germany went on to say, 'Already at 1.5 °C we're at risk of crossing irreversible thresholds on unique and threatened systems.'

Rockström's work on sustainable Earth systems is highly influential and is summed up in a video presentation for TED Talks entitled [10 years to transform the future of humanity -- or destabilize the planet](#). He and his colleagues have also studied the effects of [feedback in the Earth's climate](#) that can reinforce the hothouse effects of human activity.

'If we're going to have any hope of limiting global warming near 1.5 °C, we've got to accelerate the decarbonisation of the global economy by at least a factor of five,' said keynote speaker Tim Lenton, director of the Global Systems Institute and professor of Climate Change and Earth System Science at the University of Exeter.

One important way to shift deeply ingrained behaviours is to find social and political 'tipping points', he said. One example of a social tipping point began with Greta Thunberg's decision in 2018 to skip school and hold her lone climate protest outside the Swedish Parliament.

Thunberg's decision made it 'incrementally easier' for other young people to join her, until within months huge numbers around the world were demanding stronger climate action, said Prof Lenton.

In response to this social movement, the European Parliament voted to declare a climate emergency in November 2019, said Prof Lenton, lead author of a paper entitled [Operationalising positive tipping points towards global sustainability](#).

'As Greta would remind us, it's not enough to just have political rhetoric on the topic. We need actual action ... in the form of a reduction in greenhouse gas emissions,' said Prof Lenton.

Another tipping point in the UK resulted in the country abandoning coal power, which produced [40% of the country's electricity](#) as recently as a decade ago.

That change was triggered by a combination of three things: investment in wind power, introducing carbon pricing in the power generation sector and the EU carbon trading price (the [EU ETS](#)), said Prof Lenton. Once it became unprofitable to invest in coal, utility companies started demolishing coal-fired power stations.

'We will never go back and start rebuilding coal power stations in the UK, and good riddance to them,' said Prof Lenton.

Although some governments know how to create tipping points to bring about the changes needed to halve emissions by 2030, the majority do not, Prof Lenton told Horizon Magazine.

However, he said governments representing more than 70% of global GDP are signed up to the '[Breakthrough Agenda](#)', which informs them about the opportunities and how they can play their part. The agenda was launched at last year's COP26 climate talks in Glasgow.

People's poll

According to a poll carried out last year in G20 countries on the subject of [attitudes to planetary transformation and stewardship](#), people's awareness of the climate and biodiversity crisis is high, but they are less aware of the scale of behaviour change that is required.

The vast majority - 83% - said they wanted to do more to protect and restore nature. However, when asked what actions they would take, they prioritised increasing recycling and avoiding excess packaging.

'Higher impact changes like diet change and flying less are consistently bottom of their list,' said Sophie Thompson, who was part of the Ipsos MORI team that carried out the survey.

'We believe this is because they're unaware and maybe misinformed of which are the most effective actions to take,' Thompson said.

'Positive social tipping points are very much the holy grail of public policy on the (European) Green Deal, alongside technology,' said Jean-Eric Paquet, Director General of Research and Innovation in the European Commission. He said tipping points will play a key role for Europe.

'Scientists and policymakers have a major responsibility to continue to work on these positive social tipping points,' said Paquet, 'To ensure that we can progressively continue to bring society along.'

More positive tipping points are needed to curb emissions. There is a conundrum about why people do not act even when they know the science, said David Mair, Head of Unit, Knowledge for Policy: Concepts and Methods, at the European Commission's Joint Research Centre.

'Don't assume that you just have to get people to believe in climate change, and ... then the behavioural change, or the political change, or the attitude change is going to follow automatically,' said Mair.

'It's our values and our identities that drive how we decide what we do,' he said.

'Ultimately, we need political processes which speaks to all our values and identities ... this is a political problem so we need politics to solve it,' he said

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- [Science for climate action: EU research contribution of IPCC working group III on mitigation](#)
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