

Effectiveness of 1,500 global climate policies ranked for first time

ox.ac.uk/news/2024-08-23-effectiveness-1500-global-climate-policies-ranked-first-time



New research has revealed the 63 instances where climate policies achieved major emissions reductions, showing the way forward to meet the Paris goals and close the UN's "emissions gap." Credit: everythingpossible, Getty Images.

The world can take a major step to meeting the goals of the Paris Climate Accord by focusing on 63 cases where climate policies have had the most impact, new research has revealed. The findings have been published today in *Science*.

Our results inform contentious policy debates in three main ways. First, we show evidence for the effectiveness of policy mixes. Second our findings highlight that successful policy mixes vary across sectors and that policy-makers should focus on sector-specific best practices. Third our results stress that effective policies vary with economic development.

Study co-author Dr Moritz Schwarz, an Associate at the Climate Econometrics Programme at the University of Oxford

The study, led by Climate Econometricians at the University of Oxford, the Potsdam Institute for Climate Impact Research (PIK), and the Mercator Research Institute on Global Commons and Climate Change (MCC), analysed 1,500 observed policies documented in a novel, high quality, OECD climate policy database for effectiveness. It is the first time a global dataset of policies has been compared and ranked in this way.

Using a methodology developed by [Climate Econometrics](#) at [The Institute for New Economic Thinking](#) at the Oxford Martin School (INET Oxford), the researchers measured 'emission breaks' that followed policy interventions. The break detection methodology, called indicator saturation estimation, developed at Climate Econometrics, allows break indicators for all possible dates to be examined objectively using a variant of machine learning.

The results were sobering: Across four sectors, 41 countries, two decades and 1,500 policies, only 63 successful policy interventions with large effects were identified, which reduced total emissions between 0.6 and 1.8 Gt CO₂.

However, the authors say the good news is that policymakers can learn from the 63 effective cases where climate policies had led to meaningful reductions to get back on track.

The researchers have made the data available to policy-makers across the world, and have produced a sector by sector, country by country data visualisation [in a dashboard](#).

Overall, the Team concluded:

- 1. Climate policies are more effective as part of a mix:** In most cases, effect sizes of climate policies are larger if a policy instrument is part of a policy mix rather than implemented alone –for example combining carbon pricing with a subsidy.
- 2. Developed and developing countries have different climate policy needs:** In developed countries, carbon pricing stands out as an effective policy, whereas in developing countries, regulation is the most powerful policy.
- 3. The Paris emissions gap can be closed:** Focusing on the 63 cases of effective climate policies would close the current emissions gap to meet the Paris Targets by 26% -41%, a significant contribution.

Scaling up good practice policies identified in this study to other sectors and other parts of the world can in the short term be a powerful climate mitigation strategy... The dashboard that we make available to policy-makers provides an accessible platform to conduct country-by-country, sector-by-sector comparisons and to find a suitable policy mix for different situations.

Study co-author Professor Felix Pretis, Co-Director of the Climate Econometrics Programme at Nuffield College, University of Oxford

Study co-author Ebba Mark, researcher at the Calleva Project at INET Oxford, said the world needed to get back on track to meeting the Paris Climate Accord targets. 'Meeting the Paris Climate objectives necessitates decisive policy action as we are still falling short - data from the UN estimates that there remains a median emissions gap of 23 billion tonnes of CO2 equivalent by 2030. It is now clear that the persistence of this emissions gap is not only attributable to an ambition gap but also to a gap in the real versus expected outcomes of implemented policies. The 63 success stories identified in this study provide key information about how we can bridge the emissions gap more meaningfully going forward.'

What works: Examples from the UK and USA

The country by country analysis showed that the UK has made very successful progress in the electricity sector, with two adjacent breaks detected following the mid-2013 introduction of a carbon price floor that imposed a minimum price for UK power producers. However, the study did not find in other UK sectors any major emission reductions following a policy intervention beyond what would be expected based on long-term economic and population dynamics.

The US has managed to reduce carbon emissions in the transport sector following actions taken in the aftermath of the financial crisis. While successful policy implementation in the transport sector is generally difficult and hence can be viewed as a positive example for the climate policy globally, the lack of any further climate policy successes in other sectors points to huge remaining challenges in the power sector or industry.

Dr Anupama Sen, Head of Policy Engagement at the Oxford Smith School of Enterprise and the Environment said: 'In more than 80% of investments the total lifetime cost of a clean technology is considerably lower than that of a fossil technology. While the new UK government's policies are moving in the right direction, they need to go further and faster to unlock these lower costs. New Oxford research now provides evidence that an optimal mix of policies can achieve this, and rapidly lower a country's emissions.'

Further analysis can be found in INET Oxford's accompanying Insight brief.

The study 'Climate policies that achieved major emission reductions: Global evidence from two decades' has been published in Science.

