

Climate change goals are in reach if pledges are fulfilled, says new report

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The Paris Agreement, adopted by 196 countries in 2015, has the goal of limiting average global temperature increase to well below 2°C above pre-industrial levels, while pursuing efforts to limit it to 1.5°C.

The primary way countries aim to achieve this is by setting net-zero targets, in which they pledge to reduce their greenhouse gas emissions

and balance the remainder with methods to remove these gasses from the atmosphere.

At the time of the Paris Agreement, only a handful of countries had such pledges in place. Over the past five years, this number has increased rapidly, with major emitters like China and the United States recently making pledges to reach net-zero emissions. In 2019, the United Kingdom pledged to be net zero by 2050, following an announcement at Imperial.

So far, 131 countries have announced net-zero pledges, covering 72 per cent of global carbon emissions. However, it is unclear whether these are sufficient to prevent dangerous global heating.

The realm of the possible

Now, an analysis by a European team of researchers, including from Imperial College London, has shown that if currently announced net-zero pledges are fully implemented, temperature rises could be limited to 2.0-2.4°C, bringing the Paris Agreement goal into the realm of the possible. The study is published today in *Nature Climate Change*.

However, the authors note that this requires pledges to be fully realized, with an emphasis on rapid cuts to emissions. While some pledges are ambitious, they are only 'promises' until governments make plans and policies to ensure they happen. Policies that are currently in place would still lead to average temperature rises of approximately 2.7-3.5°C, according to the study.

Co-author Dr Joeri Rogelj, from the Grantham Institute – Climate Change and the Environment at Imperial, said: "The wave of net-zero targets by countries shows that they understand where our emissions need to land to halt global heating. However, they will only have an

impact if they are also achieved.

"Currently, the near-term pledges from countries do not yet carve out a path towards achieving their long-term net zero targets, and even under the most optimistic assumptions we still expect that we will exceed 1.5°C by a large margin. More work and more ambitious targets are still necessary."

Rapidly reducing emissions

The team say countries particularly need to focus on rapidly reducing emissions before 2030 in order to reduce the amount of greenhouse gasses they would need to remove from the atmosphere to achieve net zero by the middle of the century. Currently, the authors say, few countries have detailed plans on how they will reach this goal.

The study concludes that long-term net-zero targets that have robust plans for reducing emissions by 2030 would reduce the uncertainty in temperatures beyond this year, and could limit heating to 1.9-2.0°C.

To make their estimates, the researchers used two models that estimate future emissions resulting from current net-zero pledges at country and global scales: the Climate Action Tracker and the UN Environment Program's emissions gap report.

These two models differ slightly in the way they estimate the effects of current policies, but both show a consistent effect of net-zero pledges being carried out: a 0.8-0.9°C reduction in predicted temperature rises.

The researchers sum up by stating that existing policies and targets driving short-term action are currently not at all consistent with the announced net zero targets, and that good intentions must now translate into short-term action to put countries on a path towards meeting their

net zero emission ambitions.

More information: Höhne, N. et al, Wave of net zero emission targets opens window to meeting the Paris Agreement, *Nat. Clim. Chang.* (2021). doi.org/10.1038/s41558-021-01142-2

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