

Improved emission metric shows new path to innovative climate change policy

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Credit: University of Reading

New research has outlined a better way to evaluate the contribution of methane and other gases to global warming, providing an important step towards developing strategies to achieve the goals of the Paris Agreement.

The research, involving Professor Keith Shine from the University of Reading, demonstrates a method of defining equivalence between the different emissions, which takes into account the fact that some gases persist in the atmosphere for longer than others. This would be particularly relevant to industries like agriculture, which contribute a large proportion of [greenhouse gas emissions](#) using traditional methods in some countries, for example New Zealand.

The work, led by Professor Myles Allen at the University of Oxford, was a collaboration between researchers at Victoria University of Wellington, the Universities of Oxford and Reading, and the Centre for International Climate Research in Norway (CICERO). It shows a better way to think about how methane might fit into carbon budgets.

Professor Shine, Professor of Climate Science at the University of Reading's Department of Meteorology, said: "This work builds on a methodology we developed in Reading more than 10 years ago for comparing the [climate impact](#) of emissions of different greenhouse gases. The 2015 Paris Climate Agreement, because it specified targets for limiting global temperature change, gave our method renewed relevance. This new paper presents an evolution of our method that is much better suited to the aims of the Paris Agreement than the method that is currently used."

Professor Allen, head of the Climate Dynamics group at the University of Oxford's Atmospheric, Oceanic and Planetary Physics Department, said: "We don't actually need to give up eating meat to stabilise global temperatures (meat production is a major source of methane). We just need to stop increasing our collective meat consumption. But we do need to give up dumping CO₂ into the atmosphere. Every tonne of CO₂ emitted is equivalent to a permanent increase in the methane [emission](#) rate. Climate policies could be designed to reflect this."

Professor Dave Frame, head of Victoria University's Climate Change Research Institute, said: "Current [climate change policy](#) suggests a 'one size fits all' approach to dealing with emissions. But there are two distinct types of emissions, and to properly address [climate](#) change and create fair and accurate climate change policy we must treat these two groups differently."

The two types of emissions that contribute to climate change can be

divided into 'long-lived' and 'short-lived' pollutants. Dr. Michelle Cain, from the Oxford Martin School at the University of Oxford, said: "Long-lived pollutants, like carbon dioxide, persist in the atmosphere, building up over centuries. The CO₂ created by burning coal in the 18th century is still affecting the climate today.

"Short-lived pollutants, like methane, disappear within a few years. Their effect on the climate is important, but very different from that of CO₂: yet current policies treat them all as 'equivalent'."

More information: Myles R. Allen et al. A solution to the misrepresentations of CO₂-equivalent emissions of short-lived climate pollutants under ambitious mitigation, *npj Climate and Atmospheric Science* (2018). [DOI: 10.1038/s41612-018-0026-8](https://doi.org/10.1038/s41612-018-0026-8)

Provided by University of Reading

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