

Are climate neutrality claims in the livestock sector too good to be true?

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Research published today in the journal *Environmental Research Letters* (ERL) shows that the recent claims that meat and dairy industries are 'climate neutral' are misleading.

<https://doi.org/10.1088/1748-9326/ad0f75>

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*Are livestock industries 'climate neutral' as recently claimed? Research published today in *Environmental Research Letters* reveals how subtle shifts in definitions combined with the overlooking of key facts can distort understanding to the point where significant emitters of greenhouse gases are presented as 'climate neutral'. At the heart of the matter is methane. Because methane is a short-lived but very potent climate pollutant, declining emissions reduce warming as concentrations in the atmosphere decline. This is wrongly presented at an industry sector and regional level as a 'cooling' effect that offsets the warming effect of ongoing emissions resulting in 'climate neutrality' for businesses and their products. Like methane itself, the 'cooling' effect of reductions is temporary. The climate neutrality claims and the associated claimed alignment of industries to the Paris Agreement overlook this. They are misleading and distract us from the urgent challenge of reducing emissions of all greenhouse gases from all sectors, including agriculture.*

Recent peer-reviewed research reports claiming that meat and dairy industries are, or soon will be, climate neutral are certainly eye-catching, especially with food systems under the spotlight at COP28. For example, one study claims that the US dairy industry could reach climate neutrality by 2050 from annual methane (CH₄) emission reductions of 1–1.5%. Another declares that some US livestock sectors are 'already part of a climate solution' and that the Californian dairy industry could 'induce cooling' under annual methane reductions above 1%. The claims are also addressed at consumers who are told for example that Australian beef and lamb has a negative climate footprint. Based on these, several meat and dairy industry bodies have recently adopted and widely publicized goals to achieve 'climate neutrality'. For example, the National Cattlemen's Beef Association in the US aims to reach climate neutrality for their beef production by 2040. The claims are eye-catching especially because we know that animals kept for meat and milk are large contributors to human-caused methane emissions that together account for 0.5°C of global warming compared to 0.8°C caused by long-lived greenhouse gases such as carbon dioxide (CO₂).

The publication from Donnison and Murphy-Bokern in ERL examines these claims in detail in the context of wider relevant climate science and policy. They trace out how with changed definitions and overlooked facts livestock industries are presented as aligned to the Paris Agreement. These claims depend on a new and arguably misleading definition of the term 'climate neutral', where an industry or business is climate neutral if its contribution to elevated global temperatures is stabilized at a constant level at a point in time. The claims rest also on the use of a recently-developed climate metric (called GWP*) to examine the

effect of small reductions in methane emissions from regional livestock sectors on global temperatures. Using GWP*, a livestock sector with declining methane emissions is claimed to be 'climate neutral' because methane mitigation reduces its warming impact, sometimes called a 'cooling effect', offsetting the further warming impact of its continued methane and other GHG emissions. The livestock research reports however fail to make it clear that this reduced warming effect of methane reduction is temporary. Temporary neutrality is an oxymoron in this context. The potential wider implications become clear if we apply the same thinking to the fossil fuel sector: natural gas (methane) producers could use a reduction in leakages in their processes to claim climate neutrality because the resulting 'cooling' offsets the warming caused by the continued combustion of the used gas.

It is now critical that policymakers at COP28 are not distracted by these claims and that they advance swiftly to adopt national and sectoral mitigation strategies consistent with the Paris targets.

Caspar Donnison reflected: *"Getting to the bottom of the claims involved careful analysis of the relevant livestock research reports on one side and linking this to the academic literature about global warming metrics on the other. Each repeated reading of key papers revealed more nuances until we could clearly unravel the claims and show that livestock sectors are not 'climate neutral'".*

Donal Murphy-Bokern added from a policy perspective: *"I know from recent public debate in Ireland that the livestock research we examined risks causing confusion in businesses, amongst consumers, and throughout policy communities more generally. I hope our paper will help support a focus on reducing all emissions from all sectors with consideration of all relevant facts."*

The background is the ambition of the Paris Agreement to stop global warming by achieving net-zero emissions of greenhouse gases. The term 'climate neutral' was coined by policy makers to mean net-zero emissions of greenhouse gases calculated using the long-established GWP₁₀₀ metric. The livestock research reports scrutinised in the ERL paper subtly shift the term 'climate neutral' to meaning net zero further warming measured using GWP*. Combined with the application of GWP* at business sector and regional level, this change in definition opened the possibility to claim that an industry or farm business is 'climate neutral' and aligned with the Paris Agreement when a reduced warming effect of small reductions in its methane emission off-sets the on-going warming effect of remaining emissions. However, this claimed state of 'climate neutrality' relates to a point in time and it is temporary. It is an illusion. Activities such as intensive dairy production are presented as 'climate neutral' from small reductions in methane emissions. The CO₂ and N₂O emissions that are so off-set during the temporary period of reduced warming continue causing further warming.

The publication

Donnison, C. and Murphy-Bokern, D. (2023). Are climate neutrality claims in the livestock sector too good to be true? *Environmental Research Letters*, 19 01101. <https://doi.org/10.1088/1748-9326/ad0f75>

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