

R.T. Pierrehumbert reinforcing why using methane as a quick fix is not a good idea

Methane mitigation is essentially useless in the absence of very stringent and immediate measures to restrict CO₂ emissions.

It is simple common sense that we should treat the cause of an irreversible harm first and defer action on the reversible harm.

Part of the misconception about the value of early methane mitigation comes from extensive use of a particular emissions metric known as global warming potential (GWP).

Emission metrics that aggregate short-lived and long-lived gases seek to do the impossible, because the two kinds of gases have fundamentally different consequences for climate.

There is little harm in delaying the mitigation of the decadal gas, because almost all of the advantages of mitigation will be captured within a decade of the time mitigation occurs. Hence, there is little to be gained from early mitigation of the short-lived gas. In contrast, any delay in mitigation of the long-lived gas ratchets up the warming irreversibly.

The warming caused by the long-lived gas persists long after the emissions cease, whereas that from the short-lived gas mostly dissipates within a few decades. These two climate futures are very different, and it is hard to think of any criterion by which the climate future with larger and irreversible warming is not the preferable alternative.

The warming due to short lived greenhouse gas emissions more than a decade or two before the peak decays so quickly, that it doesn't contribute materially to the peak value

For short-lived agents, temperature depends on the instantaneous emissions rate, whereas for millennial agents it depends on cumulative emissions. No climate policy that fails to respect this essential difference can have a good outcome. The key distinction can also be phrased in terms of reversibility versus irreversibility.

The reversibility means that their mitigation can be deferred without much harm, whereas deferring mitigation of a millennial gas commits Earth to an additional warming that is essentially irreversible.