Article 4.1 and the 'false equivalence' of Net Zero

The Paris Agreement provides the blueprint for how countries—called 'Parties' in the climate talks -- are to meet their climate targets. But during the Paris negotiations, some Parties supported by fossil fuel interests vehemently opposed language in any agreement that called for complete decarbonization of energy and transport sectors. The final text shifted away from true-zero targets for 2050.

Instead, Paris Agreement Article 4.1 calls for "a balance between anthropogenic emissions by sources and removals by sinks" in the second half of this century:

> *In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to* achieve a balance between anthropogenic emissions by sources and removals by sinks *of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.*

From this was spun the unscientific concept of 'net zero'.

Article 4.1 introduces new complexities into global decarbonization efforts by suggesting that Parties could align with <2°C pathways through achieving this balance. Although the language of the Paris Agreement does not directly use the term 'net zero', nonetheless this (mis-)reading of Article 4.1 has come to dominate discussions of climate action. Virtually all national and corporate climate-mitigation commitments today are defined in 'net zero' terms.

This relies on a false equivalence between fossil carbon and terrestrial carbon. Fossil carbon was created many millions of years ago, by plants and plankton, and huge amounts were buried deep in the earth over hundreds of thousands of years. Extracting and burning that fossil carbon reverses hundreds of thousands of years of sequestration. Meanwhile carbon on land cycles quickly. In the biosphere, trees and grasses grow, accumulate carbon, are harvested or burn or die, and their carbon is cycled back into the atmosphere.

Continued emissions over the past two centuries have loaded the atmosphere with enough carbon dioxide to raise global average temperatures more than 1 °C already, and scientists estimate that there is less than 500 $GtCO_2$ more that we can emit in total and stay below the 1.5 °C temperature target. Current emissions are over 40 $GtCO_2$ annually, so the time is clearly very short to bring total emissions to zero.

This flawed assumption in the Paris Agreement assumes a false equivalence: that somehow the burning of a geological epoch of fossil fuels will be "balanced" by removals in the current biosphere. It's simply not possible. The long-term temperature goal of limiting warming to under two degrees can only be achieved through drastic and immediate cuts in current fossil fuel use.

GRAPHIC BY ETHAN CORNELL