The rapid spread of net zero targets in climate policy has been accompanied by a surge of interest in offsetting markets. In our market economies it is easy to presume that net targets will get delivered by offsetting residual emissions against carbon removals. But the Paris Agreement actually only specifies that global aggregate residual emissions be in balance with sinks. Net zero therefore does not require one-to-one matching of units of carbon emitted and removed. Still less does it require that those units be financialized as carbon credits trading in a market. To give just one example, separate regulated targets for emissions reductions and removals could do the same job. Nonetheless, the UK government recently announced its intention to integrate carbon removals into its established emissions trading scheme .

The problems with offsets

However, the presumption that such mechanisms are essential to deliver net zero has perverse consequences. Fundamentally it turns removals into an alternative or substitute for emissions cuts – rather than a supplement. But to make net zero fair and sustainable, we must eliminate 90% or more of emissions. We can afford to leave only a small recalcitrant residual to be balanced by removals. Using offsetting also exposes nascent carbon removal techniques to all the well-documented shortcomings of carbon markets. In particular, to incentives that undermine quality, additionality and permanence, and encourage fraud. These perverse outcomes would undermine both the rate of emissions cuts and the development of a broad portfolio of removals techniques. In the face of growing climate impacts it is essential that we devise effective policies for swiftly delivering net zero.

It is certainly possible to devise better (or worse) carbon trading policies. The diversity of schemes already in place tells us that much. But in presuming markets are the only option for developing and scaling new techniques and technologies we ignore the lessons of history. Even the most effective market schemes – such as sulphur trading – relied on regulatory drivers. And they still slowed progress towards environmental goals in favour of ideological compliance.

Convoluted constructions

In a new paper in Frontiers in Climate, Louise Carver and I explore the complexities involved in trying to make offset trading work. We try to draw lessons from longer-standing but largely ineffective efforts to protect biodiversity through offsetting. Enthusiastic advocates of net zero and carbon markets tend to ignore the history of no-net-loss and biodiversity offsetting. Biodiversity loss continues despite four decades of efforts to institutionalize net policies and offsetting. Much of this policy failure is baked in. This is because constructing net policies and offset markets involves convoluted reconfigurations of everything from goals to incentives.

In an effort to avoid the same failings in climate policy, we suggest it is critical to understand the processes by which net and offsetting policies are constructed. We identify six specific spaces of construction or 'making' in the biodiversity experience. To establish an environmental policy in 'net' terms first requires *reframing the goals* as stabilization or balancing, not reduction or elimination. It also demands, second, *measurability of outcomes.* And third, the establishment of *accepted equivalences* (or 'exchange rates') so as to compare different habitats, or different greenhouse gases. In turn these enable, but do not necessitate two further stages. Fourth, establishing *different incentives* (market structures rather than regulation). Fifth, *redefining actors* as producers and consumers rather than citizens.

Together, however, these various steps separate the 'net' outcome from the overall quantities of harms and benefits. Moreover, they sixth, *reconstitute expectations*, in the form of twin assumptions that damage is inevitable, and that habitat restoration or carbon removal is technologically feasible – regardless of uncertainties or evidence to the contrary. Together these six makings entangle the environmental policy with a mass of ideological presumptions about continued growth, individual consumer choice, and technological innovation.

Caught in the net

From within this set of expectations and presumptions it is hard to see alternatives. For those keen to protect or restore habitats; or to cut emissions or capture carbon, finance is scarce and incentives weak. The potential to sell biodiversity offsets or

carbon credits to fund such activities is inevitably attractive. But it is a self-destructive process. Every credit sold legitimates harm elsewhere. Every credit legitimates a system that pretends there is no alternative to continued development, growth and destruction. The presumption that offset markets are the way to net zero is not only false, but counter-productive.

Better policy options

We hope that in exposing such presumptions, we can reveal better policy options, and ways to deliver net zero that avoid the pitfalls of offset markets.

Enforcing a mitigation hierarchy which minimizes harm (or emissions) as the priority. This would help shift expectations away from continued development and damage.

Establishing clear, and accountable separate targets for harm minimization and benefit restoration. This would help enshrine awareness of the incommensurability of different benefits.

Establishing and implementing targets at global or ecologically relevant scales through coordinated planning rather than attaching them to specific projects or businesses. This would focus attention on the stability of the climate or biodiversity, rather than on economic interests.

Providing direct funding or regulatory mandates for the provision of benefits. This would remove the demand for marketized offsetting as a source of finance and disconnect action from the neoliberal presumption that markets are best.

Establishing policies and targets with attention to the multiple values associated with the benefits concerned. This would begin to reverse the simplification demanded by offset trading.

Collectively, through such policies, we could hope to detach support for long-term restoration from ongoing residual harms; and disentangle the potential benefits of net policy making from the neoliberal mechanisms of offsetting. But the history of no-net-loss and biodiversity offsetting also warns us that ideological obsessions with individual choice and markets run deep. They are not only implicated in offsetting and trading but also in the underlying approaches to quantification and

measurement. Disentangling the ‘net’ from the offset is an important step towards fair and sustainable climate policy. But fully disinfecting the ‘net’ from the perversities of neoliberalism may well take more imaginative efforts at rethinking climate governance.