Debate article (846 [max 850])

Livestock emissions need to be reduced – just like every other emission source on the planet

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When it comes to climate change, there is no "get out of jail free" card for *any* sector of the economy, and this includes agriculture. Indeed, livestock emissions are a big part of the climate problem and they must decline significantly if we are to have any chance of meeting both the Paris Climate Agreement targets (to limit warming to less than 2°C, with ambition to limit to less than 1.5°C) and the UK's own net zero target (i.e. net greenhouse gas emissions across all sectors should be zero) by 2050.

In a recent debate in this journal (VR, October 12, 2019, vol 185, p 449), ffinlo Costain explains that a new metric, proposed by a team in Oxford and known as GWP*, can be used to recalculate the climate impact of livestock, giving a negative value for the period since 1996. This is because methane emissions from livestock have fallen in the UK in line with reductions in livestock numbers since 1996.

However, this creative accounting that appears to show that livestock methane emissions are not a problem is flawed. The GWP* metric, which was created to reflect methane's relatively short atmospheric lifetime, was never intended to suggest that we should not worry about methane; it was proposed as a way of keeping the focus on the longer-lived greenhouse gas, carbon dioxide. Yes, the world needs to immediately and aggressively reduce carbon dioxide emissions, but that does not mean that we don't need to do anything about methane.

Globally, atmospheric methane concentrations are around two-and-a-half times pre-industrial levels, or 3.2 billion tonnes[2]. Costain argues that ruminants simply replace animals established by previous generations of farmers and so their emissions do not pose a further threat to the climate change problem. But livestock production and their contribution to methane emissions have not been static over the last 100 years. A recent study[3] examining trends since 1890 shows that "*methane emissions in 2014 were 97.1 million tonnes CH_4 or 2.72 Gigatonnes (Gt) CO_2-equivalents, from ruminant livestock, which accounted for 47%–54% of all non-CO_2 GHG emissions from the agricultural sector. Our estimate shows that CH_4 emissions from ruminant livestock had increased by 332% (73.6 MT CH_4 or 2.06Gt CO_2-eq) since the 1890s.*"

Additionally, agricultural scientists from New Zealand[1], a country that would not wish to overstate the contribution of livestock to climate change given its dependence on the sector, examined the impact of livestock on global warming using using a simple carbon cycle-climate model called MAGICC, which doesn't rely on the GWP* or the traditional GWP_{100} it

replaced,finding that: "*direct livestock non-CO_2 emissions caused about 19% of the total modelled warming of 0.81°C from all anthropogenic sources in 2010*".

These studies show that methane from livestock is an important contributor to climate change. As such, methane emissions from livestock cannot be simply wished, or creatively accounted, away. Furthermore, we shouldn't just argue that UK farmers can continue with current levels of ruminant production and continue to pollute just because they have done so in the past. We need to do more than just stand still.

Since methane is short-lived, and given that we will surpass the 1.5°C climate warming threshold within 12 years unless we take radical action to reduce greenhouse gas emissions, methane is a particularly attractive target gas for short-term climate change mitigation. But this should be in addition to, not instead of, the immediate and aggressive decarbonisation of all sectors of the economy.

The UK's 2050 net zero target will necessitate drastically reducing emissions and increasing the potential for greenhouse gas removal within our national boundaries. A powerful strategy to help achieve this is to restore a significant fraction of land that is currently used for crop and livestock production to carbon-sequestering woodland and wetland[4]. Although we agree that landscapes used for grazing can deliver a range of ecosystem services, and we welcome the integration of more trees and hedges into agricultural landscapes for carbon sequestration, if livestock farming continues to occupy the lion's share of UK land area, that option is greatly constrained. On the other hand, if we reduce livestock demand and production, we can spare land for cost-effective carbon capture, while also lowering methane and other greenhouse emissions, in turn helping us to meet the 2050 ambition.

Like every other economic sector in the UK, agriculture, and in particular ruminant livestock production, must take its fair share of the emission reduction burden.

References

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