



Sheep, net zero and carbon accountancy

Background

Climate change is happening. Best estimations are that the sea level has risen by 21cm since 1900 and global temperature by 1.1c since the pre-industrial period.

UK roadmap targets net-zero emissions by 2040 and Scot Gov by 2045. Livestock emissions are tracked by global warming potential (GWP).

There are two methodologies used to assess/account for livestock emissions:

- **GWP100** which treats methane like a long-lived gas.
- **GWP*** which accounts for methane as short-lived, biologically cycling gas in the atmosphere for about 12 years before it is broken down.

GWP100 – was adopted as a policy driver by the Intergovernmental Panel on Climate Change (IPCC) [since the 6th assessment in 2021](#)

NSA believes

- Narrowly focusing on methane emissions fails to recognise the wider environmental role of sheep within landscapes, producing food and fibre from land that cannot produce crops, while delivery public access, biodiversity, water quality and carbon sequestration.
- Whole farm system assessment is needed, including carbon sequestration, soil health, water management etc.
- Livestock farming contributes to emissions, but less so warming, because biogenic methane is a short-term cycle.
- Grass left ungrazed will aerobically decompose and release carbon dioxide, which remains in the atmosphere for thousands of years. When lignified it also contributes to tinder material, increasing the danger of wildfires.
- A more consistent approach to farm carbon accountancy is required, meaning:
 - 1) Harmonisation of carbon calculators – the same farm can have dramatically different results depending on which calculator is used.
 - 2) Third-party verification, such as an institute, would be beneficial.
 - 3) Full appreciation of permanent pasture as a carbon sink.
- Reducing the flock to limit enteric methane emissions risks outsourcing carbon emissions to overseas production, which could be lower welfare and higher in carbon emissions.

- UK sheepmeat production is generally efficient and a low carbon emitter (10-20kgCO₂e/kg of meat) – 70-90% of emissions are methanogenic or manurial.
- Some sheep farming systems are carbon neutral and even carbon negative.
- Reducing days to slaughter is a useful KPI to adopt to reduce emissions and increase general efficiency but care is needed not to chase efficiency because if it means more concrete, steel, diesel and bought in feed and medicines that is not truly efficient.
- Double reporting should be undertaken, to give a better overall picture of progress. This means using a warming-based metric such as GWP* as well as GWP100.
- Carbon data is important for industry advocacy and showing the public and the industry the direction of travel.
- The challenge is not whether the UK should have sheep, but how to ensure sheep farming continues to cut emissions while maximising its contribution to carbon storage and sustainable land management.

Reasoning

- UK-produced lamb emits 29kgCO₂e/kg (GWP100), about a third lower than the global average.
- UK lamb is predominantly grass-fed.
- Methane emissions are decreasing from historical peaks, so GWP* can present a sheep sector that is cooling the climate, not warming it.
- Integrated agroforestry, healthy, aerated soils, well-managed grassland, and wool can all sequester carbon. Wool is 50% carbon by weight, an important carbon sink.
- Blanket bog (500tC/ha) and raised bog (1500tC/ha) store 2-3 times more carbon than mixed woodland and sheep play a role in managing these sites.
- Appropriately managed grassland soils are a longer-term, more stable carbon sink than trees.

Future

- IPCC AR6 (Sixth assessment report) discussed GWP* as a more accurate way to represent effect of methane, which could lead to welcome changes.
- Global Methane Pledge is driving policy, research and debate in this field, combining the UK, Europe and 159 other countries.
- Working with countries with large ruminant agriculture sector (Ireland, New Zealand) will help advocate for GWP*.
- New Zealand has incorporated GWP* into its [Climate Change Response Act](#), differentiating biogenic methane from long-lived gases (Ireland, Australia and Canada are studying/piloting it).

- Future IPCC guidance/reports will hopefully start reflecting fairer accountancy methods.
- Breed4Change is looking at breeding for methane-efficient ewes.
- Work is underway to baseline farm carbon, which will hopefully develop understanding and build a national database – AHDB LiDAR and Farm Data Exchange work.
- Sustain Sheep (2024-27) aims to cut emissions 1-2%, which involves Texel and SRUC.
- SRUC's GreenSheep facility includes CT scanning, microbiome profiling, and portable accumulation chambers to oversee Sustain Sheep and Breed4Change.
- Feed additives such as garlic and seaweed can be used to reduce methane emissions, which may have uses in some higher input systems.
- Research and monitoring of Life cycle assessments can be used to focus on emissions hotspots in systems and supply chains, be it fertiliser, feed use, transport, machinery etc.