

# Letters & Notices



## CLIMATE CHANGE

### Greenhouse gas emissions in UK agriculture

FOLLOWING a number of critical television programmes and adverse media comment with regard to the environmental damage caused by global agriculture, it stimulated me to seek information to determine what was the extent of the problem in the UK. The Department for Business, Energy and Industrial Strategy (DBEIS) has published its latest report on greenhouse gas emissions (GGE),<sup>1</sup> which I found particularly helpful.

The DBEIS reported that GGE, measured in millions of tonnes of CO<sub>2</sub> or its equivalent (MtCO<sub>2</sub>e) had fallen between the years 1990 and 2010 from 793.8 to 600.9 MtCO<sub>2</sub>e (-24.3%) and between 2010 and 2018 from 600.9 to 451.5 MtCO<sub>2</sub>e, a further -24.9 per cent. So overall since 1990, a fall of -43.2 per cent, suggesting significant progress has already been made. In this time, emissions from agriculture fell from 54.0 to 45.4 MtCO<sub>2</sub>e or -15.9 per cent (Fig 1). Interestingly, in 2018 agriculture was responsible for 10.1 per cent of GGE but only 1.6 per cent of the total national CO<sub>2</sub> production.

So why is there such a substantial difference? Agriculture is considered responsible for the production of large amounts of methane, equivalent to 25.4 MtCO<sub>2</sub>e, which is 49.3 per cent of the total methane production of 51.5 MtCO<sub>2</sub>e, primarily thought to be due to ruminant production. Methane, in GGE terms, is equivalent to 25 times CO<sub>2</sub> according to Eurostat figures. Similarly, for nitrous oxide, agriculture is responsible for the production of 14.3 MtCO<sub>2</sub>e or 70.1 per cent of the total figure of 20.4 MtCO<sub>2</sub>e attributed to nitrous oxide, associated with land use, manure and fertilisers. According to Eurostat figures, nitrous oxide is considered 298 times more hazardous than CO<sub>2</sub> in GGE terms

In contrast, land use, land use change and forestry (LULUCF), another important part of overall agriculture, takes up, or acts as a sink for the equivalent of 10.3 MtCO<sub>2</sub>e, or 2.3 per cent of the total GGE production and 22.7 per cent of agriculture production. Arguably, if this is added to the agriculture figure it is reduced to an overall net figure of 7.8 per cent contribution to GGE. Hence, the interest in increasing forests to reduce CO<sub>2</sub> emissions.

I always understood that pig and poultry production were more or less carbon neutral, but other GGEs like

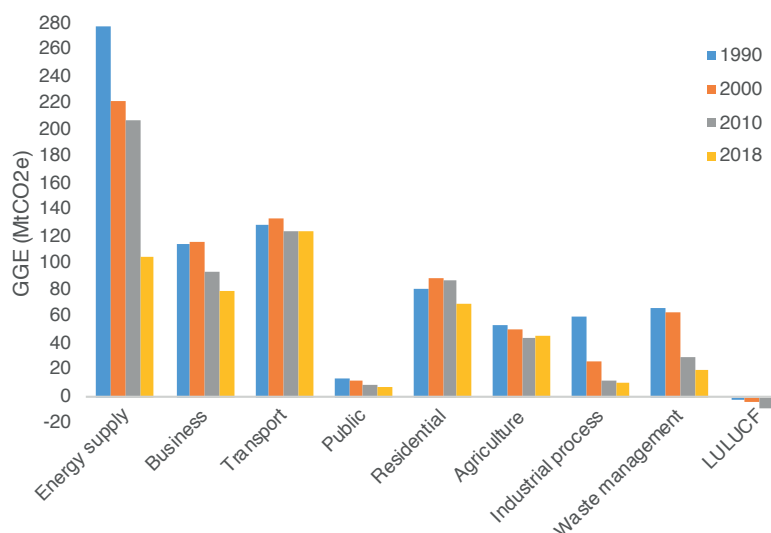
methane and nitrous oxide can lift agriculture's contribution from 5.7 MtCO<sub>2</sub> to 45.4 MtCO<sub>2</sub>e, a significant amount. This explains why ruminant production has come in for so much criticism. It is hoped that future work to reduce methane production in cattle and sheep will be successful, so we can continue to maintain their presence in the UK.

**David Burch**, The Round House, The Friary, Old Windsor, Berkshire SL4 2NR  
email: d.burch@octagon-services.co.uk

#### References

- 1 DBEIS. Final UK greenhouse gas emissions national statistics: 1990 to 2018, Final Figures. 4 February 2020. [www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2018](http://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2018) (accessed 19 February 2020)
- 2 Eurostat. Glossary: Carbon dioxide equivalent. 2017. [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Carbon\\_dioxide\\_equivalent](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Carbon_dioxide_equivalent) (accessed 19 February 2020)

doi: 10.1136/vr.m729



**Fig 1: Greenhouse gas emissions (GGE) (MtCO<sub>2</sub>e) 1990-2018 by sector. LULUCF Land use, land use change and forestry**