Rural Policy Centre
RESEARCHBRIEFING SRUC

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Forecasting UK ruminant production, population and enteric methane emissions to 2050[1]

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Key message: Recent reductions in the EI (emissions intensity, or carbon footprint) of UK beef have been driven mainly by greater efficiencies resulting from the use of sexed semen which has allowed an increase in the supply of beef from the dairy herd. These reductions in EI are welcome but the business-as-usual (BAU) forecast is for little further change in EI between 2030 and 2050. Further reductions in EI are possible yet unlikely to be achieved without changes in policy or market drivers.

Main Findings

1. From 2020 to 2050 UK demand for dairy products will increase by 18% but milk production per cow will increase by 35%, leading to reduced numbers of dairy cows.
2. The amount of prime beef produced from the dairy herd should peak in the late 2020's, then decline slowly between 2030 and 2050 as the dairy herd shrinks.
3. From 2020 to 2050 UK demand for beef will increase by 6%. Once production of dairy beef starts to decline (i.e. from the late 2020's) the suckler herd will expand to meet demand (or beef exports will decrease/imports increase).
4. The EI of all beef will not change much between 2030 and 2050 (Figure 1) despite reductions in the EI of both dairy beef and suckler beef. This is because these reductions in EI will be offset by a decrease in the % of the total beef derived from the dairy herd. As a consequence, the total enteric methane from beef will not reduce in the BAU scenario (Figure 2).
5. Domestic demand for sheep meat will be static and a small increase in productivity will lead to a slight decrease in the size of the flock and in enteric methane.

Introduction

Enteric methane is an important greenhouse gas, accounting for 5% of UK emissions in 2021. The amount of enteric methane produced is a function of ruminant populations and the rate of methane excretion per head. In turn, ruminant populations depend on consumer demand for meat and milk and the amount of meat and milk produced per animal. In this brief, we examine the trends in meat/milk demand and livestock productivity in the UK and forecast the likely business-as-usual (BAU) production, ruminant populations and enteric methane emissions to 2050.

Methods

Historic trends in UK per capita consumption of meat and dairy products were examined and used to predict future trends. Estimates of per capita consumption were then combined with ONS forecasts of the UK population to predict UK demand to 2050. Livestock productivity to 2050 was estimated and used to predict populations. Finally, the total enteric methane emissions and EI were calculated.

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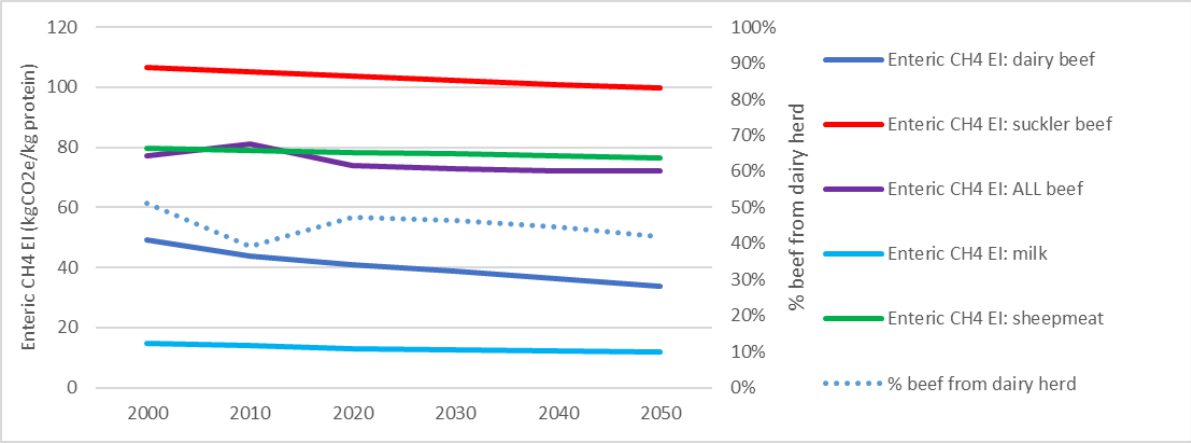

Figure 1. Emissions intensity of enteric methane from UK ruminants from 2000 to 2050

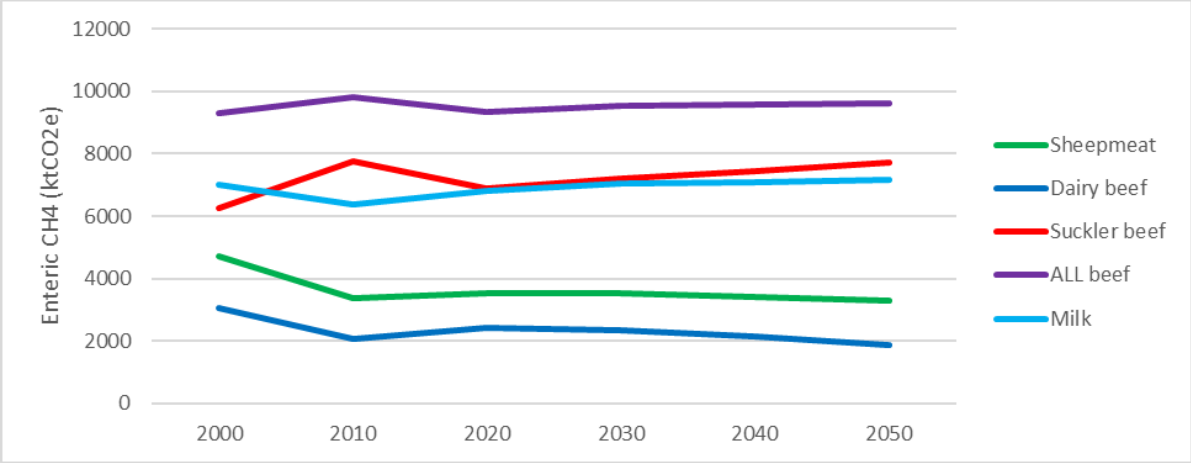

Figure 2. Total emissions of enteric methane from UK ruminants from 2000 to 2050

Policy Implications

1. Recent reductions in the EI of beef have been driven by an increase in the supply of prime beef from the dairy herd arising from increased use of sexed semen. These reductions in EI are welcome but potentially misleading as the BAU forecast is for little change in the EI of beef between 2030 and 2050. This is because reductions in the EI of dairy beef and suckler beef (arising from improved productivity) are likely to be offset by a decrease in the % of the total beef derived from the dairy herd.
2. Most of the enteric methane from UK beef production comes from the suckler herd. Improvements in the productivity of this sector have been modest, and there is significant scope for further improvement (e.g. in live weight gain and fertility) that would lead to reductions in EI.
3. Further reductions could be made by targeting enteric methane directly using measures such as feed additives and selectively breeding cattle with lower rates of methane excretion.

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