Beef Sector Opportunity to 2030 Modelling Paper

Purpose

This paper outlines modelling that has been undertaken to evaluate the beef sector growth proposition between now and 2030.

Prepared by: Iain Macdonald, Quality Meat Scotland (QMS) Market Intelligence Manager

Contact: imacdonald@qmscotland.co.uk

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Executive Summary

1.1 Over the last few years, critical mass in the Scottish beef supply chain has been exposed as a major risk to future economic stability of Scotland. With Scotland having lost 23% of its beef cows since 2006, the beef herd stood at less than 382,600 head in June 2024.

1.2 In addition, developments in quarterly population data since mid-2024 suggest that in June 2025, the decline since 2006 could reach 25%.

1.3 QMS estimates that processing infrastructure is currently working at 69-73% utilisation, with weekly slaughter averaging 9% lower than four years ago – putting processors and other elements of supply chain infrastructure at major risk of failure if there were to be further declines in availability for slaughter. This is against a backdrop of growing global demand, and a global supply heavily exposed to a changing climate in some of the major beef producing countries.

1.4 These global factors also translate through to the UK. Population growth largely concentrated around urban centres in England is set to increase demand for UK food products. Scotland, as a net exporter of food, is well placed to deliver on this with the infrastructure capacity, skills, and natural resources available to produce red meat protein.

1.5 We estimate based on most realistic data modelling that by 2030 the UK would, collectively, need to produce an **additional 278,000 tonnes of beef** to meet the forecast level of demand. This 278,000 tonnes of beef is in addition to the projected level of production in 2030, which is 8% lower than 2023 levels, and would be the volume required for the UK to be 100% self-sufficient in beef.

1.6 This amounts to a 124,000 tonne rise in the UK net import requirement in 2030 compared to 2023, meaning that the UK would need to produce 124,000 tonnes more beef in 2030 than currently projected to maintain current levels of self-sufficiency.

1.7 This volume translates, based on a proportionate share of the total UK cow herd, that **Scotland would need to produce an additional 22,000 tonnes of beef.**

1.8 Modelling of this volume of beef production signals the potential for this to generate an **additional £281m of output and £76m of GVA** for the Scottish economy, based on average price levels in 2024.

1.9 The alternative to this extra domestic production, is importing additional beef in from elsewhere in the world. In 2023, the net UK import requirement amounted to 154,000 tonnes of beef in carcase weight equivalent, rising to 164,000 tonnes in 2024, so the modelled rise to 278,000 tonnes is a considerable increase from current levels. Compared to 2023, it would be 81% higher, while it would be up by 69% on 2024.

1.10 With UK beef production typically more efficient, and lower in emissions than the global average, this would seem a perverse action when the goal globally is to reduce emissions in line with the Paris agreement.

1.11 Furthermore, climatic and regulatory constraints to production, combined with a rising and urbanising global population signal increased competition for beef at the global level. It should be highlighted here that if these trends were to boost overseas demand for beef produced in the UK, the challenge of satisfying domestic food security would become even greater, as higher imports would be required to offset the growth in exports. It should also be noted that increased competition for beef also has the potential to generate significant consumer price inflation.

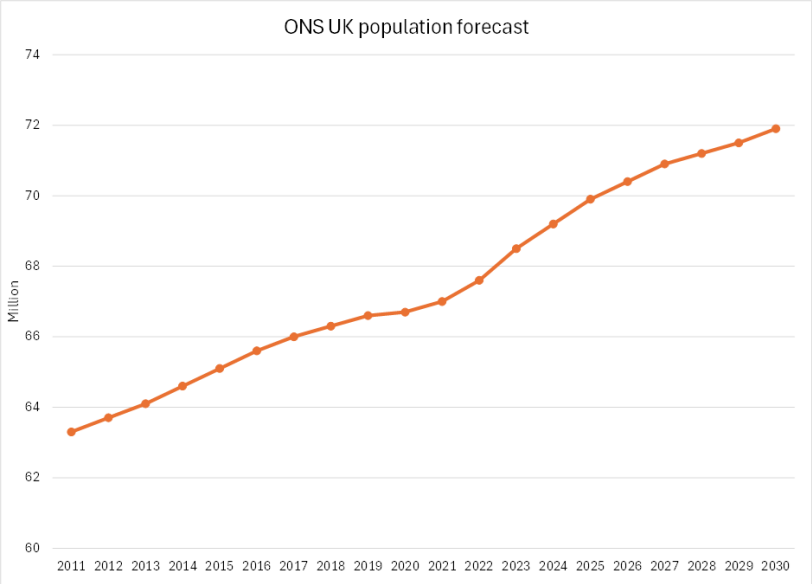
2 **Model detail**

We have outlined the realistic scenario and give some commentary as to how we have used this to underpin the growth opportunity we see.

Population Growth:

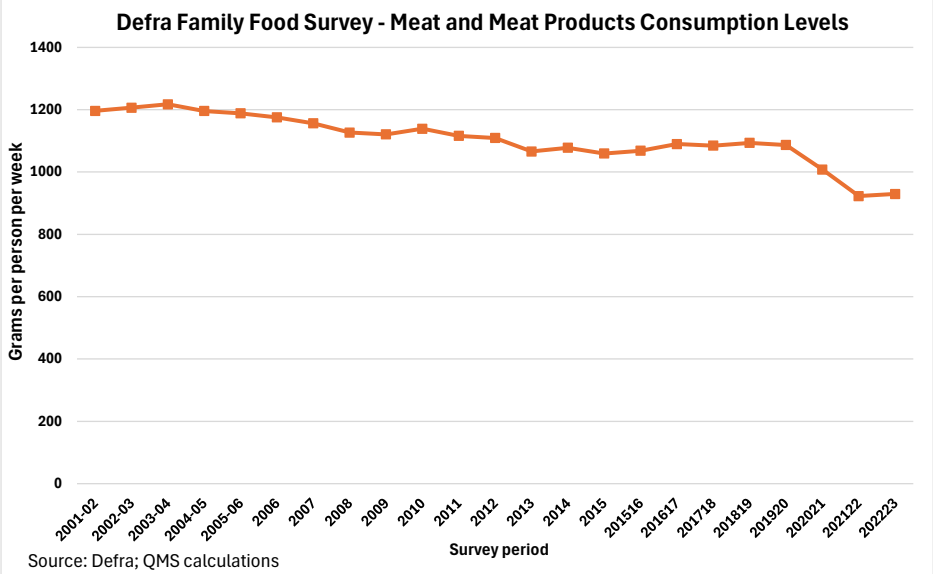
2.1 We have used Office of National Statistics (ONS) data to look at projected population growth to 2030. This data is at a UK level, which we have based this work on. By 2030, the ONS has forecast a 3.9% increase in the UK population compared to 2024.

Graph 1:



2.2 Consumption:

2.2.1 We have reviewed a number of different scenarios around consumption, including reviewing the impact of pessimistic recommendations (11% reduction in meat consumption by 2030 compared to 2019, with the 2025 target of a 3% reduction on 2019 levels) from the UK's Committee on Climate Change (UKCCC).



Source: Defra; QMS calculations

Total is household consumption of carcase meat and non-carcase meat and meat products plus eating out consumption of meat and meat products, meat-based sandwiches, and Indian, Chines or Thai meat or fish-based dishes

2.2.2 We note that there is a disparity between some of the data contained within the UKCCC's 7th Carbon Budget; specifically, around assertions that meat consumption decreased by 10% between 2020 and 2022.

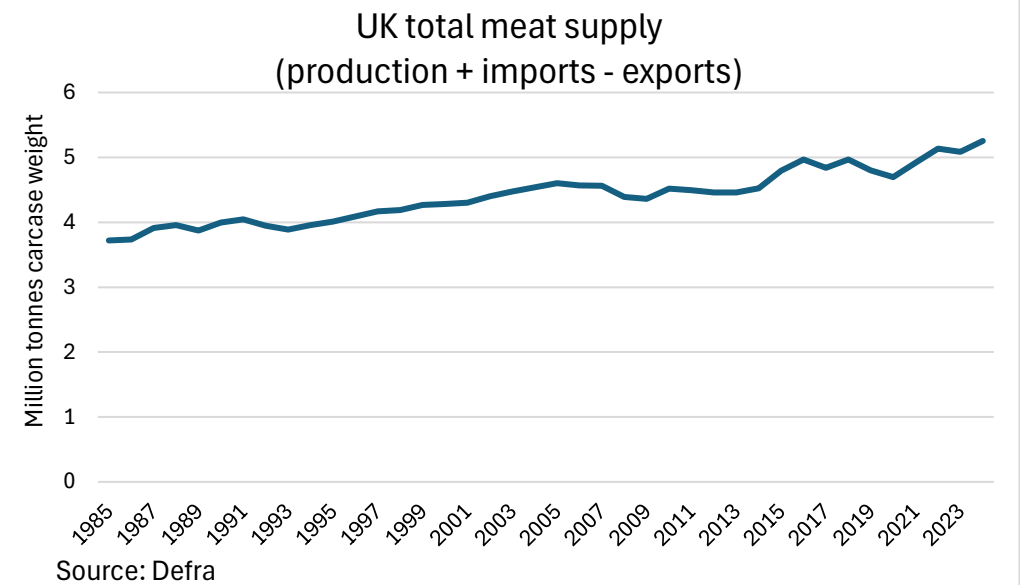
2.2.3 We understand that this data is derived from the 'UK Family Food Survey' which is a subjective data source. It appears to have picked up a significant fall in consumption per person from lower eating out demand during the pandemic, which subsequently failed to rebound, while also failing to pick up any consequent uplift in meat consumption at home.

2.2.4 Objective data from Defra's Meat Balance Sheets would say that meat consumption increased during this time period and calls into question how realistic these targets for reductions in meat consumption are.

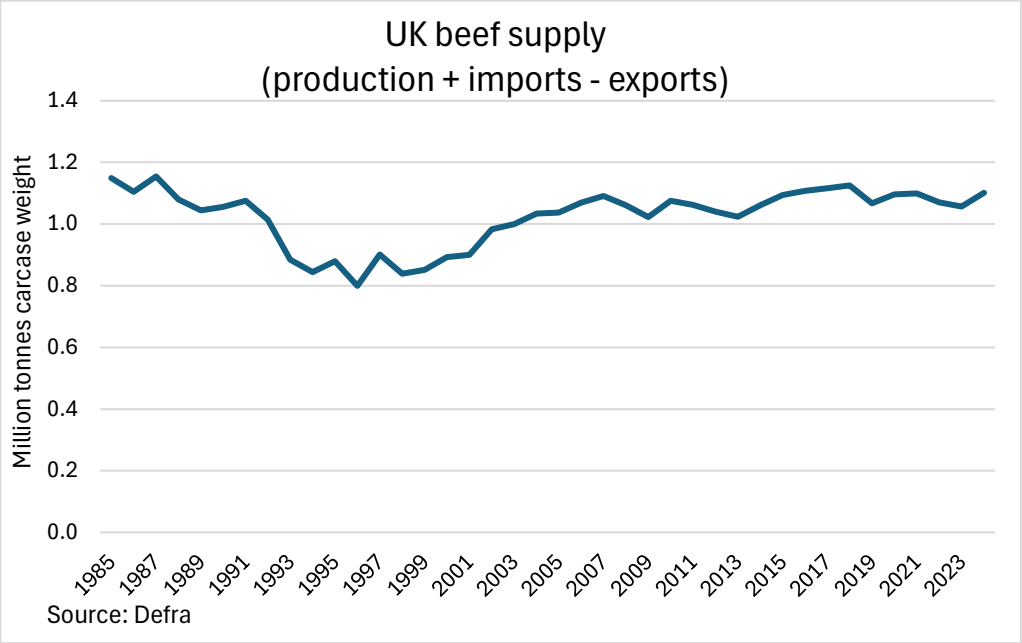
2.2.5 Over the longer-term, Defra's meat balance sheets show an increase in overall meat consumption and a fairly flat trend in beef consumption, with population growth offsetting any dip in per capita demand.

2.2.6 Defra's red meat balance sheets show that while the volume of beef added to the UK market in 2023 was the lowest since the 2019 baseline, and 1% below this base year level, there was a rebound of 4.2% in 2024. For the 2025 target of a 3% reduction on 2019 levels to be hit (assumed 3.1% reduction for red meat), consumption would need to fall by more than 6% in 2025.

2.2.7 However, market signals are pointing to strong consumer demand, with retail sales rising compared to the winter of 2023/24 according to Kantar, and farmgate prices surging higher by 27% between the end of 2024 and mid-April 2025. Furthermore, demand has held firm despite significant meat retail price inflation in recent years, with the CPIH index for beef and veal averaging 27.7% higher in 2024 than in 2019.



Source: Defra
Total meat is defined as beef, sheepmeat, pigmeat and poultrymeat



2.2.8 We have therefore modelled consumption based on a pragmatic 3.7% reduction in per capita consumption below 2019 levels in 2030, which would align better to where actual consumption is likely to move towards; reflecting firm meat demand since the covid-19 pandemic potentially balanced against by price rises and the impact of an aging population on dietary patterns. This figure has been based on projecting forward to 2030 the average annual rate of change in the decade to 2024 (-0.3% per year), based on a comparison of three-year average levels (2022-24 v 2012-14) to smooth out the year-to-year volatility.

3. Production:

3.1 We have used QMS cattle supply modelling to 2030 and its 'baseline' scenario as the basis for future production levels.

3.2 This had originally projected UK beef production to be 6% lower in 2030 than in 2023.

3.3 However, as a result of further contraction in suckler cow numbers at a rate above the longer-term baseline trend, revised modelling at the start of 2025 is now signalling a steeper decline than this, potentially of 8% relative to 2023, and by 11.5% on 2019. This is similar to the 8% reduction relative to 2023 for cattle and sheep numbers as per the UK CCC's 7th carbon budget.

CCC Table 2:

Table 7.4.1
Key values in the Balanced Pathway for agriculture

		2025	2030	2035	2040	2050
Emissions	Emissions in year ($MtCO_2e$)	47.0	39.2	31.9	29.2	26.4
	Change in emissions since 1990	-13%	-27%	-41%	-46%	-51%
	Change in emissions since 2022	-1%	-18%	-33%	-39%	-45%
	Share of total UK emissions	11%	13%	17%	27%	
Key drivers – quantity variables	Change in average meat consumption (versus 2019)	-3%	-11%	-20%	-25%	-35%
	Changes in cattle and sheep numbers (versus 2023)	6%	-8%	-22%	-27%	-38%
	Change in average crop yield (versus 2022)	0.5%	4%	7%	10%	16%
	Percentage of low-carbon mobile energy use in the fleet	0%	1%	16%	36%	93%
Key drivers – price variables	Farm measures – faster finishing beef (opex savings £/1,000 head)*	49,100	48,850	48,880	48,880	48,845
	Farm measures – grass-legume mix (opex savings £/1,000 hectares)†	72,660	72,925	73,465	73,810	74,620

Source: Scotland's Rural College (2025); CCC analysis.
Notes: We have blanked out the share of total UK emissions in 2050 because total UK emissions have reached Net Zero at this point. All costs are in 2023 prices. *Faster finishing beef – reduces the age that beef cattle are slaughtered, thereby reducing the emissions of the animal. †Grass-legume mix – legumes such as clover fix nitrogen into the soil, thereby reducing the need to apply nitrogen fertiliser, which reduces nitrous oxide emissions.

3.4 Allocation by country based on share of total UK cow herd:

3.4.1 We have used UK datasets as a starting point and then allocated country share based on the share of the total UK cow herd. Each country (England, Scotland, Wales, Northern Ireland) has a different split of beef:dairy production.

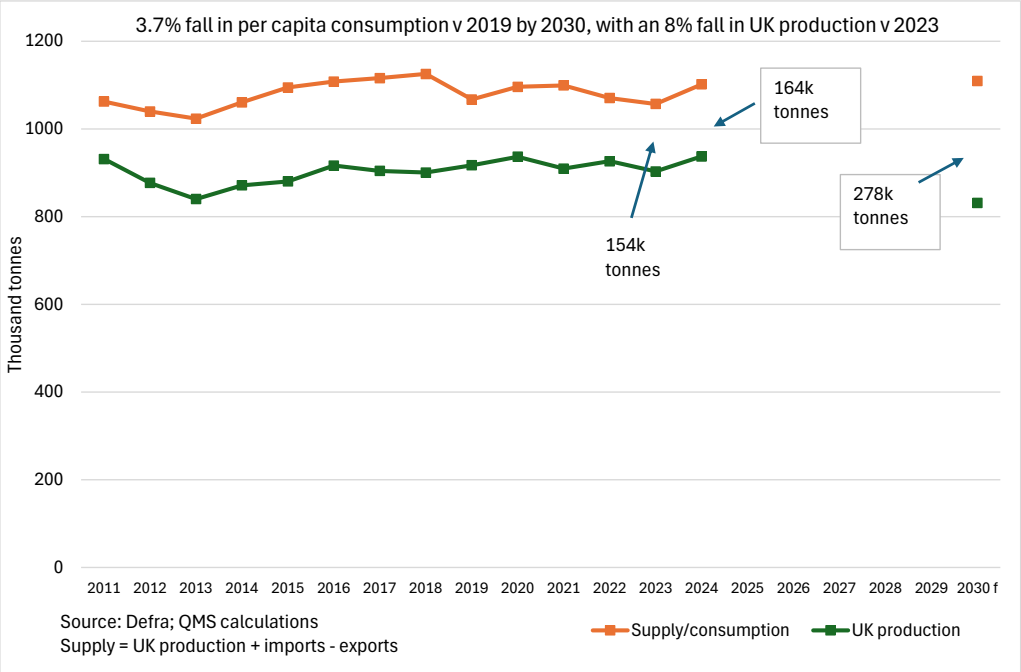
3.4.2 We have used average carcase weights to convert tonnes of beef back into heads of animals. For England, Wales and Northern Ireland, we have used UK average carcase weights for all cattle slaughtered in 2024, sourced from Defra's slaughter statistics, while for Scotland, we have used carcase weights from the Scottish Government's slaughter survey, which indicates significantly heavier weights in Scotland. As a result, the number of animals required per tonne of beef is lower in Scotland than in the rest of the UK.

3.4.3 Heads of animals are converted back into a required number of cows based on the split between prime and cull cattle slaughter, calf to cow ratios in the June Census results, and the proportion of the calf crop going to slaughter.

4. Pragmatic modelling scenario

4.1 Modelling a pragmatic 3.7% fall in per capita consumption in 2030 compared to 2019 (-1.9% v 2022-2024 avg), with an 8% fall in UK production compared to 2023

= 278k tonne net import requirement
= 124k tonne rise in net import requirement in 2030 v 2023



- Scotland - 21,995 tonnes of beef equivalent to 59,520 cattle (50,159 prime cattle and 9,361 cull cattle), requiring an additional 78,871 cows.
- England - 65,557 tonnes of beef equivalent to 200,051 cattle and an extra 267,436 cows.
- Wales - 15,338 tonnes of beef equivalent to 46,803 cattle and an extra 63,989 cows.
- Northern Ireland - 21,573 tonnes of beef equivalent to 65,831 cattle and an extra 72,117 cows.

4.2 At UK level, this scenario results in a jump in the net import requirement from 154,000 tonnes in 2023 and 164,000 tonnes in 2024 up to 278,000 tonnes in 2030. This is a rise of 81% on 2023 and 69% on 2024. In this scenario, UK self-sufficiency in beef production falls to 75% in 2030 from 85% in 2023 and 2024.

4.3 This scenario, which is underpinned by recent trends in production, consumption, and population growth would leave the UK with a significantly reduced level of food security and increasingly reliant on imports from overseas to satisfy consumer demand.

This is before factoring in the potential for a tightly balanced global beef market with production challenges and a growing middle class and urbanising population in less economically developed regions, resulting in increased export demand and heightened competition for imports.