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Structure and Support of
the Scottish Beef Sector 2019
– impact of CAP 2015 reforms

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Key points

- Future funding arrangements for farm support once the UK is no longer under the Common Agricultural Policy (CAP) remain uncertain. However, data on the level of past funding provided to individual farm businesses can (via various modelling assumptions and caveats) be used to estimate a notional 'beef envelope' of support provided to the beef sector.
- The estimated beef envelope in 2019 was €197m or 37% of the Scottish Pillar I envelope of €531 (or €225m, 38%, of €589 if LFASS is included). This is a third lower than in 2005, when it was €293m (46%) of €633m, reflecting both a declining Scottish envelope but also changes to funding formulae plus a declining number of beef producers and suckler cows that impacts on the relative distribution of support.
- The distribution of beef funding across beef producers is highly uneven, ranging from a mean of under €6k for the smallest herds to a mean of over €400k for the largest, with an overall mean of almost €28k and overall median of just over €17k.
- Expressed per £1 of Standard Output (an approximation of the value of beef production), variation in beef payments per business translates into an intensity of support ranging from less than €0.05 to greater than €0.60, with average levels of support at €0.27 with a median of €0.31 per £1 of Standard Output.
- Similarly, expressed per hectare, intensity of beef support ranges from €1 per hectare to over €600 per hectare with an average beef support payments of €70 per hectare across the sector with a median of €182 per hectare.
- Such apparent variation reflects both the diversity of Scottish beef production in terms of management systems (including coexistence with other enterprises) and scale, but also changing criteria for how funding is calculated.
- Most (83%) of suckler cows are found on cattle and sheep farms, but they are also found on other farm types – notably mixed, dairy and cropping. Small herds (<50 cows) dominate (67%) yet account for a minority (21%) of the herd. In contrast fewer, but larger herds, account for most cows.
- Most (77%) finishing cattle are found on cattle and sheep farms, but, as with suckler cows, they are also found on other farm types – notably mixed, dairy and cropping. Similarly, whilst small herds are numerically dominant (71%) they account for a minority (19%) of animals, larger finishing units account for the bulk of animals (indeed a tiny 3% of finishers have 30% of finishing animals).

- Between 2014 and 2019, there was reduction of 7% in the number of businesses with suckler cows and a decline in cow numbers of 4%. However, within this, there was considerable churn with some herds growing and some shrinking - but also some being formed and some disappearing altogether. Similarly, the number of businesses with finishing animals also fell by 7%, but this was concentrated in smaller herds and indeed the numbers of animals on larger finishing units increased.
- Mean support payments going to suckler producers fell by 1% over the 6-year period with 30% reduction for the handful of producers with over 750 suckler cows - and 18% decrease to the producers in the 250-499 size category.
- On average, beef envelope support per £1 of beef Standard Output was €0.28 in 2019 (down 7% from 2014) with the lowest rates in the 1-9 category). The largest producers saw their rate of support (expressed in Euros) fall 38% from €0.30 in 2014 to €0.19 in 2019. In reality, on farm support receipts benefited from Sterling's depreciation of against the Euro— that provided an effective currency uplift of +14.6% on payments made in £GBP over the period.
- On average, beef envelope support per hectare remained static at about €80/ha although there were quite significant decreases in some size categories. In the largest (750+) group beef envelope payments fell 39% from €470/ha to €288/ha (due to lower support payments but also a 19% in the area under their control).
- On average, the level of beef support per £1 beef standard output on businesses with finishing animals fell by 7% across Scotland but the large specialist finishers had to contend with decreases of over 20% - with support levels falling from €0.18 to €0.09 per £1 beef output. Producers in the 250 -499 size grouping had average payments fall by 27% from €0.20 o €0.14.
- Beef payment rates per hectare also fell significantly in the largest finisher size groupings – more than 40% decline for herds over 500 on average – due, in part, to increased total area on these farms but also to changes in payment calculations.



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The Beef Envelope

Introduction

1. Future funding arrangements for farm support once the UK is no longer under the Common Agricultural Policy (CAP) remain uncertain, pending UK-government decisions. However, by estimating the share currently allocated to the beef sector, it is possible to use current funding levels as a guide to the budget potentially available to the Beef Climate Suckler Scheme in future years. Data on the level of past funding provided to individual farm businesses with suckler beef cows or dairy cows in 2014 and 2019 was provided to SRUC by SG-RPID.
2. Estimation of a “beef envelope” provides an approximate amount of CAP support likely allocable to the beef sector if CAP support payments are considered coupled. Whilst some payments, such as the Beef Efficiency Scheme and the Scottish Suckler Beef Support Scheme are indeed coupled, many of the payments received (such as the Basic Payment Scheme, Less Favoured Area Support Scheme and Greening) are decoupled area-based payments that are not explicitly tied to any given enterprise. The calculation of a beef envelope to reallocate these decoupled payments to agricultural activities requires some assumptions and modelling choices – an analogy may be drawn with the disaggregation of overhead costs to different enterprises. For the purposes of this exercise, current funding was allocated at a business level on the basis of Standard Outputs (SO). These combine physical activity levels (i.e. number of different categories of livestock, area of different crops) recorded for individual farms with average farmgate prices to estimate the value of output produced by a farm in a given year (2013). For details of the methodological approach evolved to estimate payment envelopes see ANNEX 1 – Methodology for estimating the Beef Envelope using Standard Outputs.
3. Although sectoral-average prices may misrepresent actual prices received by individual farms, these standardised estimates are routinely calculated and used in the June Agricultural Census (JAC) and underpin the classification of farms into different types (e.g. cropping, dairy, LFA beef). Data extracted from the JAC for 2014 and 2019 was used to calculate Standard Outputs (expressed in £ using 2013 SO coefficients¹) for each individual farm with beef (and dairy) cattle. To ensure consistency with the business-level data on support payments, calculations were conducted at the level of the farm or croft business rather than individual holding, to account for businesses comprising two or more holdings.
4. Calculated Standard Outputs were then used to allocate decoupled funding received by a farm business to each of its enterprises, in proportion to each enterprise’s share of the total Standard Output for the farm. Where coupled payments had been received, these were allocated directly to the relevant enterprise. The beef envelope provided here is acknowledged as an underestimate as the analysis did not have access to CAP payments made to specialist

¹ 2013 SO factors were provided by RESAS

beef finishers that had no breeding cows in 2014 and 2019² and payments were allocated to any horticultural, potato, pig and poultry activities on these farms and crofts – activities that had historically been excluded from the CAP.

5. Unless otherwise stated, all tables and graphics are derived from own calculations using SG-RPID payment data and RESAS JAC data.

Scottish Beef Envelope

6. Tables 1 and 2 summarise the results of summing individual beef envelopes across all farms and crofts – showing the Scottish national Beef Envelope estimates for 2014 and 2019. For example, in 2019 the total Scottish Envelope was €531m for Pillar I (€589m for Pillar I plus LFASS³) and the estimated amount allocated to the beef sector was €196.81m or 37.1% (€225.42m or 38.2% if LFASS included). Whilst the Pillar I Scottish envelope has shrunk (-16%) over the period 2005 to 2019, the estimated beef envelope has shrunk proportionally faster (-33%), reflecting the observed decline in beef production relative to some other enterprises and the allocation methods used here. For comparison, the estimated Pillar I dairy envelope was around €28.12m (5.3%) in 2019, down from €35.1m (5.5%) in 2005, a reduction of 20%.
7. Whilst it should be noted that farmers are not obliged to use support payments (even coupled ones) for any particular purpose (i.e. funds are fungible), the approach used here estimates the current distribution of funding to farms with beef suckler cattle based on activity, and therefore serves as an indicator of the level of funding required for continuity under future schemes.

Table 1: Estimated value (€m) of national, beef and dairy funding envelopes⁴

Pillar 1 (€m)	Scottish Envelope	Estimated Beef Envelope		Estimated Dairy Envelope	
2005	€632.60	€292.80	46.3%	€35.10	5.5%
2014	€515.08	€204.11	39.6%	€33.05	6.4%
2019	€530.53	€196.81	37.1%	€28.12	5.3%
Pillar 1 & LFASS & BES (€m)					
2014	€597.97	€245.84	41.1%	€34.46	5.8%
2019	€589.35	€225.42	38.2%	€29.23	4.96%

² Payment data was only made available for those with breeding cows these businesses all must have had breeding dairy cows.

³ The amount spent on BES in 2019 has not been provided to date

⁴ Scottish Envelope Data Sources: 2005 -Thomson and Moxey evidence to Bew Review; 2014 and 2019 – Economic Report on Scottish Agriculture using official exchange rates.

Table 2 Estimated changes (%) in the size of national, beef and dairy envelopes (Pillar I only).

Pillar 1	Scottish Envelope	Beef Envelope	Dairy Envelope
2005-2019	-16%	-33%	-20%
2014-2019	-3%	-3%	-15%

8. Using the business level estimates for the beef envelope Table 3 illustrates how the 2019 beef envelope was allocated across businesses with different suckler herd sizes in Scotland. Of the 8,100 farm businesses that were allocated payments through the beef envelope 6.4% had no suckler cows, but received payment through having calves or finishing stock. There were 6 businesses (0.1% of beef envelope businesses) with over 750 suckler cows and they collectively received €2.5m in beef envelope payments (1.09% of total funding, at a mean of €408,812). 23.6% of businesses with fewer than 10 suckler cows collectively received €11.3m or 5% of envelope support at a mean of €5,927 (although the median was only €3,939). The 1,189 farms with suckler herds over 100 cows accounted for 14.8% of the businesses that received support through the beef envelope yet accounted for 43.6% of the envelope (€98.3m). This reiterates how the majority of the support monies currently are allocated to the largest producers, meaning that targeting changes to conditions of support will likely yield the greatest impacts in terms of emissions reductions or improved technical performance of the national herd.
9. Whilst the average level of beef envelope support across Scotland was €27,845 Table 3 also reveals that the median was only €17,287, demonstrating that the average was heavily skewed by larger payments. The lower quartile beef envelope payment was €6,259 meaning 25% of recipients received less than this, and the upper quartile was €36,878 with 25% of recipients receiving more than this. The quartiles along with the median within each suckler cow size grouping help illustrate how the beef envelope is allocated across businesses with beef cattle.

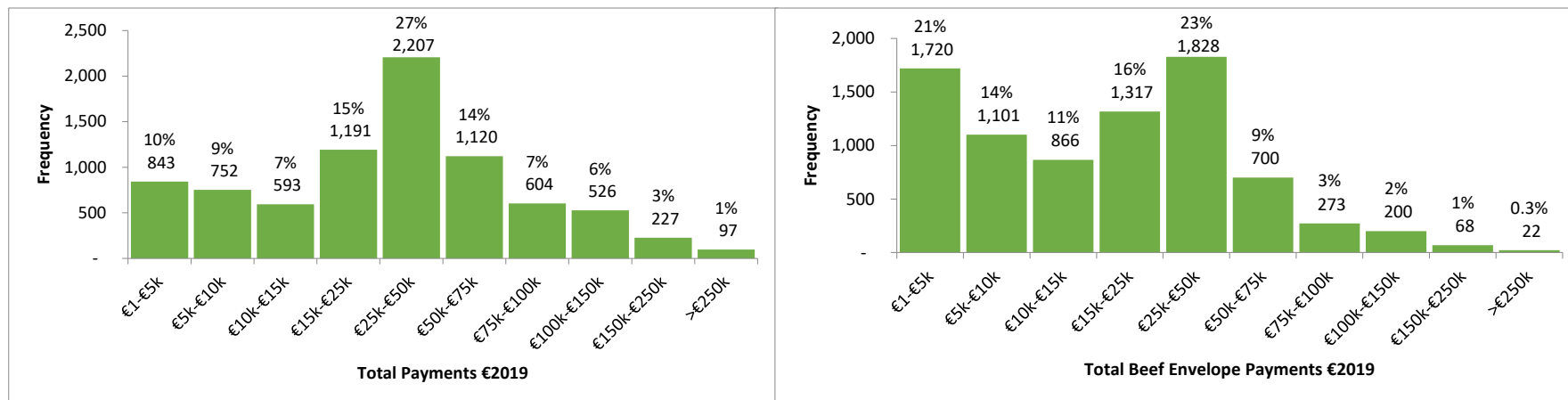
Table 3 Distribution of the 2019 Beef Envelope by suckler cow herd size

Businesses Receiving Support through Beef Envelope					Beef Envelope Payments			
Suckler Cow Herd Size	Businesses	% Businesses	Beef Envelope	% Beef Envelope	Mean	Lower Quartile	Median	Upper Quartile
None*	515*	6.4%	€2,994,254	1.3%	€5,871	€1,155	€3,253	€7,588
1-9	1,908	23.6%	€11,308,091	5.0%	€5,927	€2,152	€3,939	€7,189
10-49	2,858	35.3%	€50,572,116	22.4%	€17,695	€9,455	€15,305	€22,914
50-99	1,630	20.1%	€62,141,984	27.6%	€38,124	€26,382	€34,804	€45,314
100-249	1,043	12.9%	€73,801,627	32.7%	€70,759	€49,069	€63,831	€84,903
250-499	126	1.6%	€18,691,022	8.3%	€148,341	€93,227	€125,605	€164,917
500-749	14	0.2%	€3,446,495	1.5%	€246,178	€221,388	€239,171	€283,517
750+	6	0.1%	€2,452,874	1.1%	€408,812	€277,959	€387,367	€512,596
Scotland	8,100		€225,408,463		€27,845	€6,259	€17,287	€36,878

**farms with no suckler cows but with dairy cows – male calves and finishing animals would account for beef envelope*

10. Figure 1 provides a graphical illustration of how the total Pillar 1 + LFASS + BES payments (total support) made to businesses with suckler or dairy cows in 2019 were allocated, alongside the distribution of the 2019 Beef Envelope payments. Overall there were 97 (1%) of these breeding cattle businesses in receipt of over €250k total support with a further 22 (3%) receiving over €150k beef envelope support. The different distributions between the two graphs represents payments that were being made towards other “envelopes” (e.g. sheep, dairy, arable) from total support on these businesses. 21% of the businesses received less than €5k in beef envelope support, with a further 14% receiving between €5k and €10k beef envelope support. That means that 35% of the producers received less than €10k beef envelope support – which may be worth considering when devising any future payment schemes for suckler beef that may have onerous conditions for smaller beef producers.

Figure 1 Histogram of businesses by extent of €Total Pillar 1, LFASS and BES payments and €Beef Envelope payments in 2019



11. Table 4 shows how the 2019 beef envelope was distributed across geographic regions of Scotland. €46.2m or 20.5% of the beef envelope was allocated to farms and crofts whose main location code fell within the former Strathclyde region (which includes Ayrshire and Lanarkshire and Argyll and Bute), with 16.9% (€39.9m) to Grampian, 16.3% (€36.8m) to Dumfries and Galloway, 13% to the Highlands (€29.4m), 8.1% (€18.2m) in the Borders and 9.9% (€22.2m) in the Islands. The number of businesses in receipt of beef envelope payments influences the average payment made within a region which across all Scotland was €27,849 per business (noting large variance). The 487 farms in Lothian that received 2019 beef envelope support had the highest average payment at €37,351 (with a median of €25,170 revealing how skewed the mean is by large payments). 25% of Borders recipients received more than €50,205 – the upper quartile. The lowest mean support received was in the Highlands at €22,169 and by far the lowest median (€11,869), reflecting the large number of small crofts with small beef herds.

Table 4 Distribution of the 2019 Beef Envelope by region

Businesses Receiving Support through Beef Envelope					Beef Envelope Payment			
Region	No. of Businesses	% Businesses	Beef Envelope Payments	% Beef Envelope	Mean	Lower Quartile	Median	Upper Quartile
Borders	487	6.0%	€18,189,883	8.1%	€37,351	€9,130	€25,170	€50,205
Central	259	3.2%	€6,570,254	2.9%	€25,368	€7,197	€17,299	€34,692
Dumfries & Galloway	1,142	14.1%	€36,816,727	16.3%	€32,239	€6,712	€19,805	€42,033
Fife	204	2.5%	€5,001,242	2.2%	€24,516	€6,383	€16,582	€33,421
Grampian	1,370	16.9%	€39,920,129	17.7%	€29,139	€7,697	€19,419	€37,883
Highland	1,326	16.4%	€29,395,689	13.0%	€22,169	€4,424	€11,869	€28,808
Islands	852	10.5%	€22,224,169	9.9%	€26,085	€5,349	€16,061	€35,129
Lothian	205	2.5%	€6,756,669	3.0%	€32,959	€7,405	€22,818	€48,339
Strathclyde	1,744	21.5%	€46,229,569	20.5%	€26,508	€6,397	€16,826	€33,644
Tayside	504	6.2%	€14,280,117	6.3%	€28,334	€7,297	€18,155	€38,325
Scotland	8,100		€225,384,448		€27,849	€6,259	€17,287	€36,878

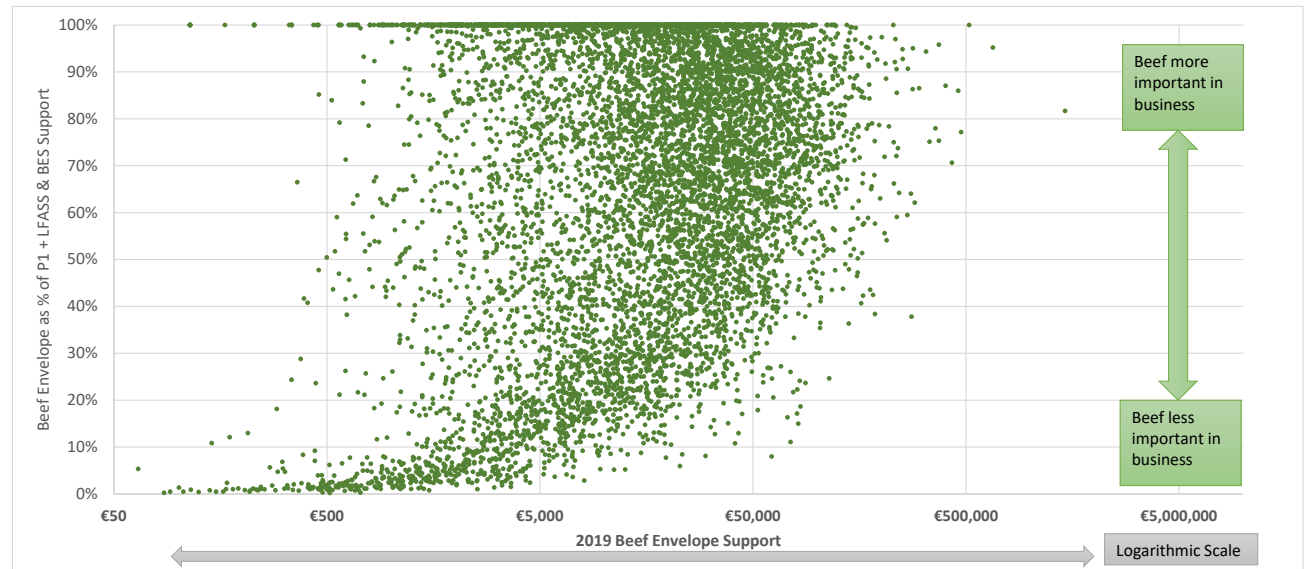


<https://outaboutscotland.com/scotlands-regions/>

Relative Beef Envelope Payments

12. Figure 2 illustrates the relative importance of beef support within a business' total payments (PI + LFASS + BES support) - noting this analysis only illustrates businesses with breeding suckler or dairy cows. The *x-axis* (log-scale) is the estimated payment allocated to the beef envelope for every business and the *y-axis* is the proportion of total payments (all P1, LFASS and BES) allocated to the beef envelope for each business. For those towards the top of the diagram most of their total support payments are for beef activities on the farm, whereas for those towards the bottom of the diagram beef is of lower importance to the businesses overall

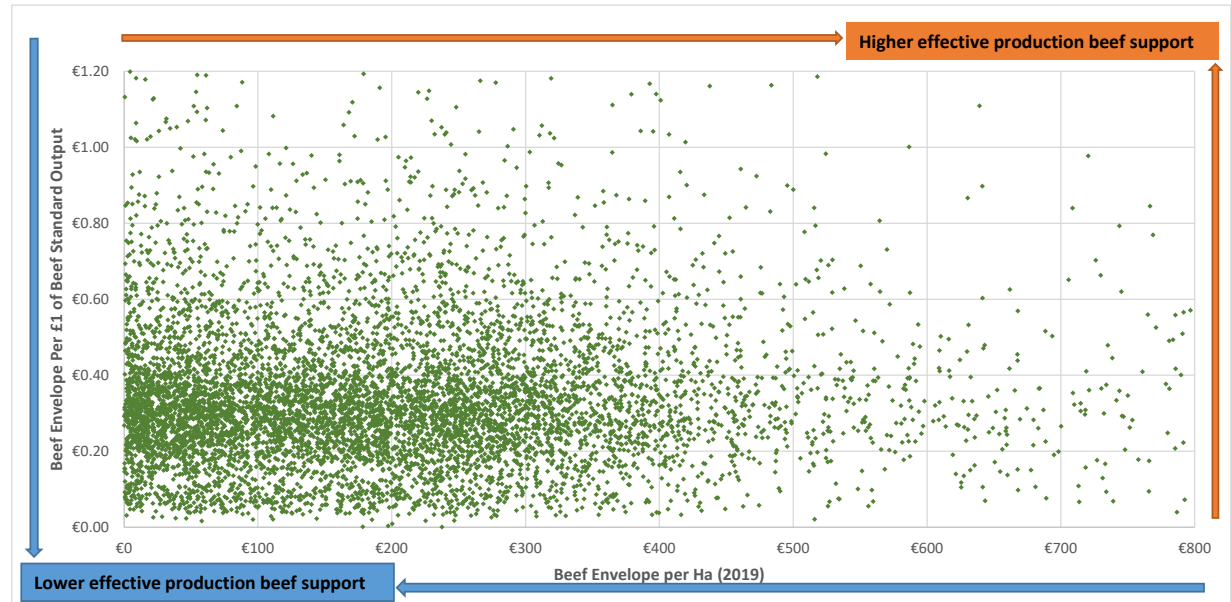
Figure 2 Plot of 2019 beef support envelope payments against proportion of total P1 & LFASS going to the beef envelope



activity mix. For 25% of the recipients (lower quartile) the beef envelope accounted for less than 44% of total PI + LFASS + BES support (10% had less than 19% of total payments allocated to the beef envelope) whilst the median was 73% of support allocated to the beef envelope and 25% of the recipients (upper quartile) had more than 94% of their payments allocated to their beef envelope.

Figure 3 Relative beef envelope payments per hectare and per unit of beef standard output, 2019

13. Figure 3 illustrates the estimated €beef envelope support that each farmer with breeding cows (suckler or dairy cows) received in 2019. This effectively illustrates the relative “subsidisation” of production based on either total hectares available to the business or per £1 of standard output (SO) coming from beef production on each business⁵. Some per hectare figures are skewed by crofting common grazings and seasonal rentals being excluded from the analysis (this was derived from JAC not IACS) meaning there is an underestimate of some businesses areas claimed (equally those leasing in large seasonal lets will be under represented to an extent) resulting in some abnormally high estimated per hectare support rates (these are cut off at €800 per ha). The graph demonstrates that there is a tight banding of Beef Envelope support at about €0.20 to €0.40 per £1 of standard output generated from beef enterprises regardless of per hectare rates – with very low SO support rates generally made up of beef finishing businesses (including rearer-finishers).



14. Figure 4 shows total support and beef envelope payments per hectare made to farmers and crofters with breeding cows (beef and dairy) in 2019. Noting the point about seasonal lets and common grazings areas missing leading to some abnormally high estimated payment rates there were only 8% of these businesses that received support of less than €100 per hectare with 38% receiving total payments of €200-€300 per hectare with a further 22% in the €300-€400 per hectare bracket. In contrast 30% of the businesses received less than €100 per hectare in beef envelope support (17% were under €50 per

⁵ Standard output is expressed in £s (fixed at 2013 prices and using 2013 output factors) and support payments are expressed in €. This avoids variation in both output prices and exchange rates.

hectare beef support) with 24% in receipt of €100–€200 per hectare and 22% received €300–€400 per hectare. There is a long tail with 12% receiving over €400 per hectare beef envelope support (noting missing JAC areas that can skew these data).

Figure 4 Frequency distribution of total payments and beef envelope payments made to businesses per JAC hectare €2019

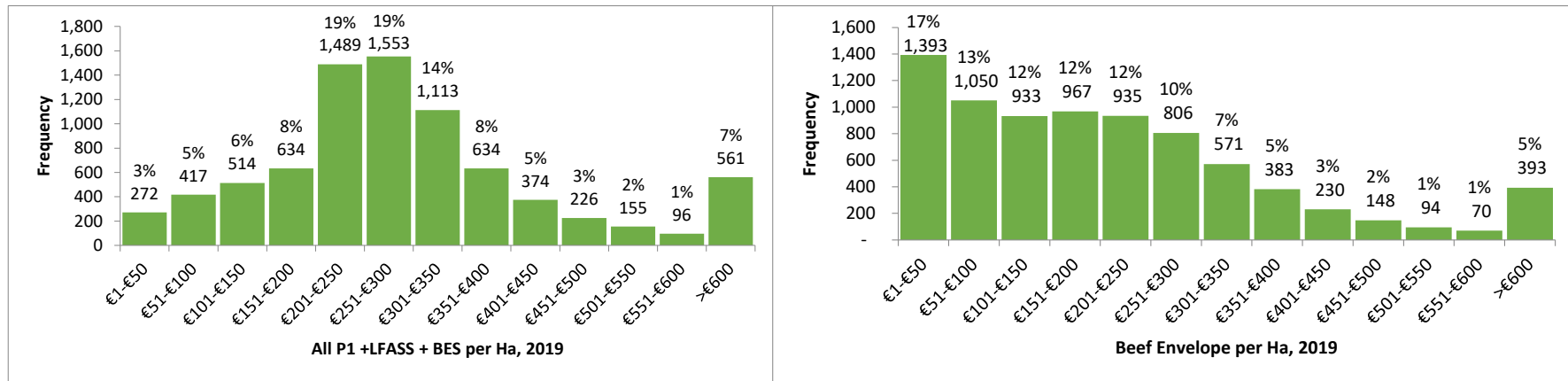
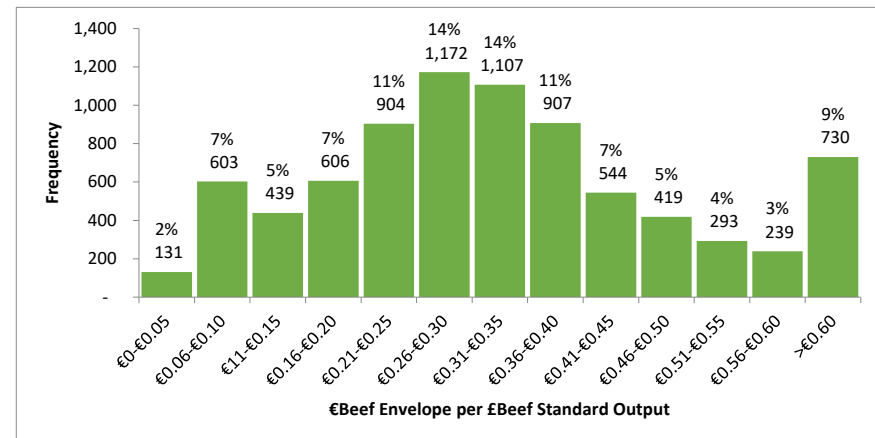


Figure 5 Frequency distribution of beef envelope payments per £1 Standard output- €2019

15. Figure 5 shows the distribution of businesses that fall into different bands of relative “subsidisation” levels – illustrating € of Beef Envelope support per £1 of standard output generated from the beef enterprise. The distribution is quite ‘normal’ although there is skewing from the upper band. This illustrates how variable decoupled CAP support levels have become if considered in ‘coupled terms’ – i.e. per unit of output. The figure demonstrates that 9% of beef businesses received less than €0.10 per £1.00 of beef standard output, whilst 9% of businesses received over €0.60 support per £1.00 of beef standard output. Whilst it is tempting to consider these bands as quite close it is worth pointing out that the 11% of businesses that received €0.21-€0.25 were receiving on average 65% less support per unit of standard output than the 11% of businesses that received €0.36-€0.40 per £1 beef standard output.



Structure of the Industry

16. Using the June Agricultural Census (JAC) for 2019 linked to CAP payment data provides a snapshot of the industry for June in 2014 and 2019. The data is summarised here to show the national herd structure, geographies and estimated payments (beef envelope) allocations by farm types, herd size groupings and geographies. In addition, changes since the 2015 CAP reforms and the move away from historically based Single Farm Payments to regionalised Basic Payments and Greening support are described in this section.

Suckler Herd

17. Table 5 illustrates how the 2019 suckler herd was distributed between different robust farm types⁶, with farms across most farm types having suckler cows. As expected, the majority of suckler cows were found on LFA Cattle & Sheep (74.4% of suckler producers and 73% of cows) and Non-LFA Cattle & Sheep (8.4% of suckler producers and 7.9% of cows).

Table 5 Number of suckler cow producers and suckler herd by robust farm type 2019.

Farm Type	Businesses		Suckler Cows		Suckler Herd Size			
					Mean	Lower Quartile	Median	Upper Quartile
Specialist cereals	116	1.4%	3,623	0.9%	31	4	20	44
General cropping	226	2.7%	11,881	2.9%	53	11	35	76
Specialist horticulture & permanent crops	19	0.2%	1,057	0.3%	56	3	44	83
Specialist pigs	9	0.1%	505	0.1%	56	4	31	91
Specialist poultry	18	0.2%	1,714	0.4%	95	7	45	177
Specialist dairy	283	3.3%	2,127	0.5%	8	1	3	7
LFA Cattle & Sheep	6,304	74.4%	304,180	73.0%	48	7	25	65
Non-LFA Cattle & Sheep	714	8.4%	32,726	7.9%	46	6	23	62
Mixed holdings	783	9.2%	58,867	14.1%	75	18	52	101
Scotland	8,472		416,680		49	6	26	67

18. Table 6 reveals that the mean suckler herd size across Scotland in 2019 was 49 cows, although this was heavily skewed by the larger herds – with the median across all herds only 26 cows. The upper quartile figure for Scotland illustrates that 25% of producers (2,118) had herds of over 67 cows – although they were not all specialist suckler producers (as demonstrated in Table 5). 31% of the businesses with suckler cows had breeding herds of less than 10

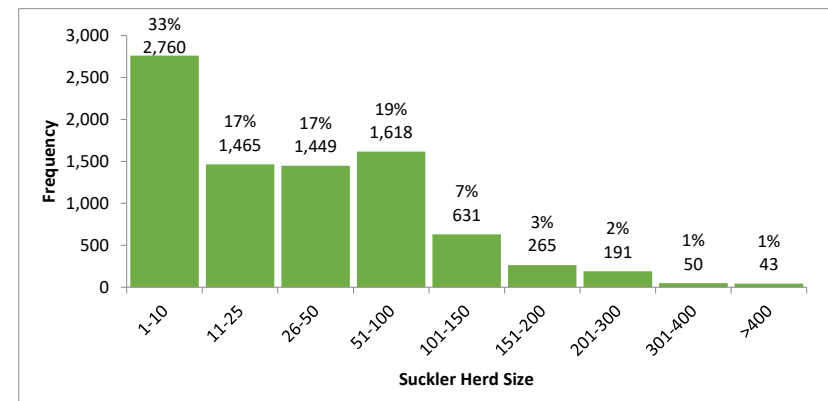
⁶ Robust farm types are allocated based on dominant form of farm output, with type determined if an enterprise (or mix of enterprises) generates two-thirds of total farm standard output.

cows and only accounted for 2.4% of the national herd – they were also generally very extensively farmed (31 hectares of farmland per cow). Another 35.5% of producers had 10-49 cows and they accounted for 18.6% of the national herd (combined it means that two-thirds of producers only accounted for 21% of the breeding herd – worth noting if targeting schemes on technical efficiency or greenhouse gas emissions. At the other end of the scale there were 6 farms with over 750 cows (on 1.3 cows per hectare) and a further 14 businesses that carried 500-750 cows on 2.4 hectares per cow and 129 businesses with 250-499 cows on 3.9 hectares per cow. Collectively these farms with suckler herds of over 250 cows accounted for 1.8% of the businesses with sucklers but 13.7% of the cows. The 1,050 (12.4%) of businesses with 100-249 cows accounted for 37.1% of the national suckler breeding herd.

Table 6 Number of suckler cow producers and suckler herd by suckler cow herd size 2019.

Suckler Cow Herd Size	Businesses		Suckler Cows		Suckler Herd Size				Hectares Per Suckler Cow
					Mean	Lower Quartile	Median	Upper Quartile	
1-9	2,617	30.9%	10,142	2.4%	4	2	3	6	31.4
10-49	3,007	35.5%	77,578	18.6%	26	16	24	35	12.8
50-99	1,649	19.5%	117,591	28.2%	71	59	70	83	5.6
100-249	1,050	12.4%	154,464	37.1%	147	115	137	169	4.0
250-499	129	1.5%	42,826	10.3%	332	278	317	374	3.9
500-749	14	0.2%	7,801	1.9%	557	528	545	569	2.4
750+	6	0.1%	6,278	1.5%	1,046	802	906	1,265	1.3
Scotland	8,472		416,680		49	6	26	67	6.7

Figure 6 Histogram of Scottish suckler herd sizes, 2019



19. Figure 6 graphically illustrates the distribution of Scottish suckler herd sizes, using slightly different size groupings from Table 6. This further illustrates the point that there are a large number of relatively small producers – with 50% of producers having 25 or less suckler cows. From a policy perspective, it is challenging to provide support to meet the Government’s objectives as well as those of businesses when there is such a diverse range of herd structures – meaning some focused attention on specific policy objectives may be necessary for different herd categories.

20. Table 7 provides a regional breakdown of Scotland’s suckler herd and suckler producers. Grampian’s 1,431 producers (16.9%) carried the largest proportion of the national herd (19.7% - 82,232 cows) with Dumfries and Galloways 1,120 producers (13.2%) accounting for 18% (75,199) of the national herd. Mean herd sizes in Grampian (57 cows with median 31) were lower than in Dumfries and Galloway (67 cows and median of 31). The Borders had the largest herds with

a mean of 80 cows (median 44) and its 530 producers (6.3%) carried 10.1% of the national herd. Perhaps unsurprisingly Highlands (30 cows – median 14) and the Islands (32 cows – 19 median) had the smallest average herd sizes and Highlands had the lowest stocking density (17.3 hectares per cow) with Fife the highest (3.3 hectares per cow).

Table 7 Number of suckler cow producers and suckler herd by region 2019

Region	Businesses		Suckler Cows		Suckler Herd Size			Hectares Per Suckler Cow	
					Mean	Lower Quartile	Median		Upper Quartile
Borders	530	6.3%	42,252	10.1%	80	12	44	93	5.2
Central	290	3.4%	11,308	2.7%	39	8	25	55	10.5
Dumfries & Galloway	1,120	13.2%	75,199	18.0%	67	7	31	82	3.8
Fife	196	2.3%	12,624	3.0%	64	8	32	79	3.0
Grampian	1,431	16.9%	82,232	19.7%	57	9	32	80	3.9
Highland	1,501	17.7%	44,795	10.8%	30	5	14	43	17.3
Islands	917	10.8%	29,563	7.1%	32	5	19	56	3.3
Lothian	196	2.3%	14,325	3.4%	73	11	43	95	4.4
Strathclyde	1,749	20.6%	72,590	17.4%	42	7	25	59	7.8
Tayside	542	6.4%	31,792	7.6%	59	9	34	80	9.2
Scotland	8,472		416,680		49	6	26	67	6.7

Finishing Herd

21. Within Scotland's specialist beef production system it is essential that suckler producers are not considered in isolation. The Scottish system of beef production remains predominately based on cattle reared solely for beef production, rather than as a by-product from the dairy herd – this is the source of the Scottish premium for beef (i.e. a higher proportion of overall beef is from the suckler herd compared to, for example, England). The stratified system of production requires both producers of calves and specialist finishers – with the former taking place over Scotland whilst specialist finishing is more concentrated in low ground areas with adequate access to grazing and feed (and to abattoirs). In tackling climate change and improving technical performance both producers and finishers have roles to play – the former on conception, calving rates, calving intervals, genetics, neo natal mortality, etc – whilst finishers can influence daily liveweight gain, and the age profile at slaughter. It is only by focusing on the entire system that benefits can be derived by policy (or market) drivers. The specialist rearer-finishers in Scotland provide a unique lens into the industry as a whole – from conception to slaughter.
22. Within the Cattle Tracing System (CTS) it is difficult to assess if an animal is destined for slaughter or for breeding – unless the data is looked at retrospectively (i.e. after death or first / second calving). This is even more of a challenge when using a single snapshot of what is a highly dynamic industry

- as the June Agricultural Census (JAC) does. As such from the JAC data it is necessary to make some assumptions about what constitutes the finishing herd. Due to data complexities and limited field availability in the JAC it is acknowledged that the numbers generated can only act as a proxy for the finishing herd and there will be breeding herd replacements included in the data. As a proxy for the finishing herd the following variables were used:

- **Male cattle aged 1-2 yrs** - this includes all male calves destined for slaughter as well as future breeding bulls
- **Male cattle aged 2 yrs and over** - this includes slower maturing cattle as well as breeding bulls
- **Female beef cattle aged 1-2 yrs** - this includes breeding cow replacements (heifers) – but since females over 2 yrs are not included here any breeding heifers within the data are likely balanced against those heifers finished over 2ys of age.
- **Female dairy cattle aged 1-2 yrs** - this includes breeding dairy cow replacements (heifers) – but since females over 2 yrs are not included any breeding heifers within the data provide some balance against those heifers finished over 2ys of age. With quicker replacement rates within the dairy herd this is likely where the greatest errors can occur.

23. Table 8 provides estimates of the number of businesses carrying finishing cattle and the size of the finishing herd by robust farm type. 65% of the finishing herd in 2019 were estimated to be located on Cattle and Sheep farms (17% in the non-LFA area) with 17% on mixed holdings (likely cereals and livestock) and 13% on dairy farms. Across Scotland the mean finishing herd size in 2019 was 52 head of cattle, but that was very heavily skewed by some very large herds – with the median only sitting at 19 head of cattle. As most suckler producers will have some animals in each of the age categories this method provides limited insight into the number of large, specialist finishers.

Table 8 Number of businesses with finishing cattle and the finishing herd by robust farm type 2019.

Farm Type	Businesses		Finishing Herd		Finishing Cattle (head)			
					Mean	Lower Quartile	Median	Upper Quartile
Specialist cereals	190	2.0%	5,903	1.2%	31	3	13	38
General cropping	311	3.3%	16,610	3.3%	53	8	26	70
Specialist horticulture & permanent crops	17	0.2%	607	0.1%	36	2	26	53
Specialist pigs	14	0.1%	826	0.2%	59	3.75	20	104
Specialist poultry	24	0.3%	1,582	0.3%	66	4	38	115
Specialist dairy	623	6.5%	64,695	12.9%	104	45	80	124
LFA Cattle & Sheep	6,357	66.6%	240,564	48.1%	38	4	13	40
Non-LFA Cattle & Sheep	942	9.9%	83,917	16.8%	89	7	26	91
Mixed holdings	1,067	11.2%	85,135	17.0%	80	13	44	99
Scotland	9,545		499,839		52	5	19	60

24. Table 9, however, provides evidence on the distribution of the finishing cattle by finishing herd sizes. In 2019 there were 37 businesses (0.4%) that accounted for 9.3% (46,321) of Scotland’s finishing herd at a mean herd size of 1,252 (median 1,058) being carried on 0.3 hectares per head of cattle. Another 47 businesses (0.5%) with 500-749 head accounted for 5.6% of the finishing herd with an average size of 597 head of cattle (median 590) on 1.5 hectares per head. The 219 businesses (2.3%) in the 250-449 size bracket carried 15.1% of the herd at an average of 345 (median 325) on 1.3 hectares per head stocking rate. This means that 303 businesses (3%) with over 250 head of cattle were responsible for 150k head of cattle in total (30% of the national herd) and 1,329 finishers with over 100 head accounted for 60% of the herd – demonstrating how concentrated the finishing sector is and where targeting efforts to reduce finishing ages would reap largest initial gains.

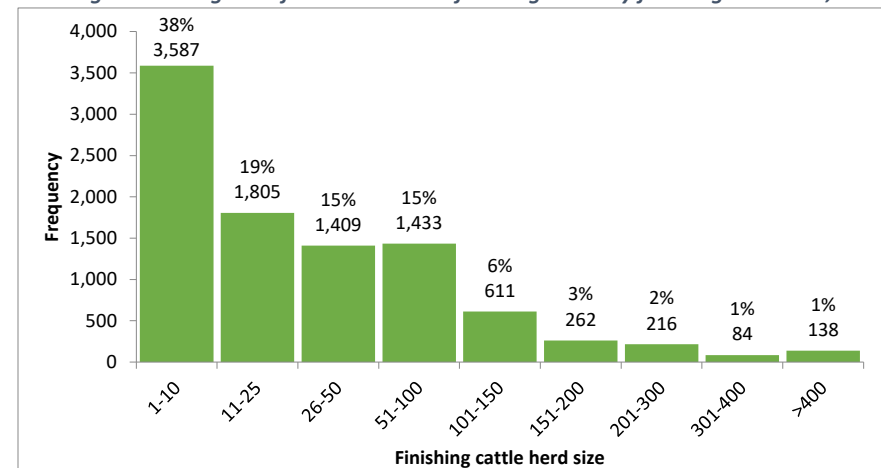
Table 9 Number of businesses with finishing cattle and the finishing herd by size categories, 2019.

Finishing Herd Size	Businesses		Finishing Herd		Finishing Head				Hectares Per Finishing Head
					Mean	Lower Quartile	Median	Upper Quartile	
1-9	3,416	35.8%	12,731	2.5%	4	1	3	6	56.7
10-49	3,332	34.9%	81,520	16.3%	24	15	22	33	15.1
50-99	1,468	15.4%	104,703	20.9%	71	59	70	83	4.8
100-249	1,026	10.7%	150,904	30.2%	147	115	136	171	2.4
250-499	219	2.3%	75,605	15.1%	345	282	325	400	1.3
500-749	47	0.5%	28,055	5.6%	597	529	590	663	1.5
750+	37	0.4%	46,321	9.3%	1,252	936	1,058	1,234	0.3
Scotland	9,545		499,839		52	5	19	60	49

25. Figure 7 graphically represents the distribution of Scottish finishing herd across businesses carrying cattle used as the proxy for finishing animals. The point is reiterated with 57% of businesses having 25 or fewer head of finishing cattle. 138 businesses had over 400 head and 222 running more than 300 head.

26. Table 10 shows the data on the finishing herd by the region where the main location code of the business was located. Grampian was the most significant region for finishing cattle in 2019 – accounting for 20% of the businesses and 27% of the animals at an average herd size of 71 (heavily skewed by larger finishers as demonstrated by the median of 25) and a stocking density of 2.8 hectares per head. Dumfries and Galloway was the second most important

Figure 7 Histogram of businesses with finishing cattle by finishing herd sizes, 2019



region, accounting for 22% of the finishing herd and 14.6% of the businesses with average herd size of 81 (median 32) and 2.9 hectares per head. Business in the Highlands had the smallest herds on average (18 with median of 7) followed by the Islands with average finishing herds of 27 head (median 14).

Table 10 Number of businesses with finishing cattle and finisher herd by region 2019

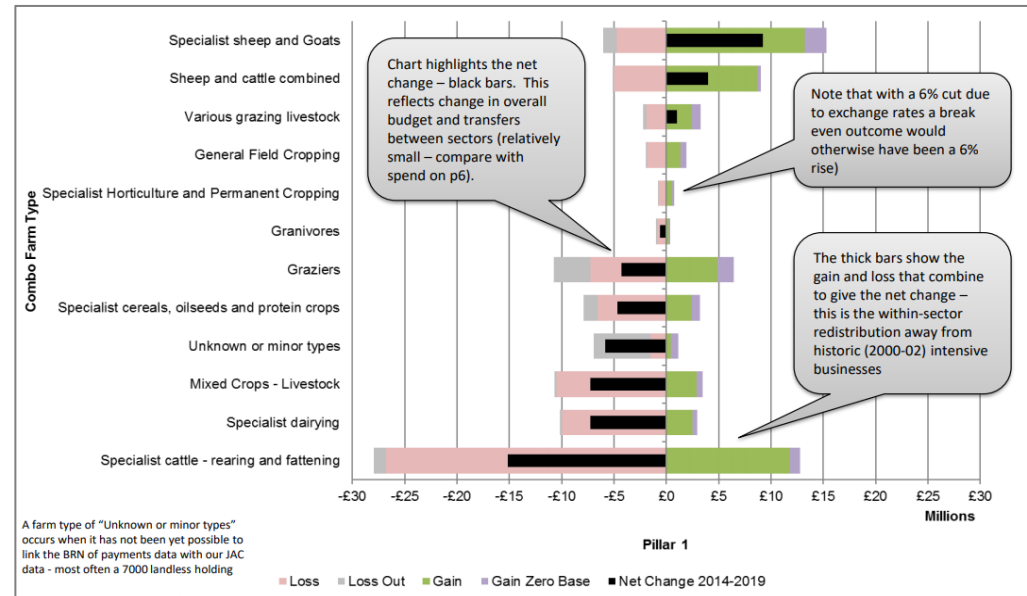
Region	Businesses		Finishing Herd		Finishing Cattle (head)				
					Mean	Lower Quartile	Median	Upper Quartile	Ha per Finishing head
Borders	584	6.1%	37,406	7.5%	64	7	22	64	6.2
Central	334	3.5%	14,406	2.9%	43	4	16	50	8.7
Dumfries & Galloway	1,393	14.6%	110,654	22.1%	79	9	32	88	2.9
Fife	241	2.5%	19,500	3.9%	81	8	32	92	2.5
Grampian	1,878	19.7%	134,059	26.8%	71	7	25	70	2.8
Highland	1,353	14.2%	24,402	4.9%	18	2	7	25	31.3
Islands	848	8.9%	22,508	4.5%	27	3	14	45	4.5
Lothian	235	2.5%	16,048	3.2%	68	8	27	70	4.4
Strathclyde	2,057	21.6%	93,690	18.7%	46	6	20	60	6.5
Tayside	622	6.5%	27,166	5.4%	44	5	19	52	11.4
Scotland	9,545		499,839		52	5	19	60	5.9



Structural and Payment Changes from 2014 to 2019

27. Analysis of payment data post 2015 CAP reforms (Matthews et al 2017⁷) suggested that that “regions associated with specialist cattle and dairy have seen reductions in payments but are still overall the largest recipients” and that “the businesses that have gained from the reforms are those with a historically lower intensity of production – this means the redistribution between sectors and regions is thus much lower than within them.” This means that anticipated changes in CAP payments affected individual farms differently, with those historically more intensive and in receipt of higher per hectare Single Farm Payments most likely to have been negatively impacted by the move to regionalised CAP support payments. Larger intensive cattle producers are in this category. Matthew’s et al (2017) summarised the projected sectoral impacts of CAP reforms (shown in Figure 8) and predicted that the specialist cattle sector would lose about £15m in Pillar 1 support between 2014 and 2019 (although a group of farms would lose about £28m in the sectors whilst other beef rearers and finishers would gain about £13m). As such, the ‘beef crisis’ that came to the fore in 2019⁸ was partially predictable as a result of some redistribution of CAP support between 2015 and 2019.

Figure 8 Estimated changes in Pillar 1 payments between 2014 and 2019 by farm types



Source: Matthews et al (2017)

28. Using the CAP payments data and JAC data Figure 9 illustrates the changes in total beef envelope payments and beef envelope payments per hectare between 2014 and 2019, the period in which CAP support payments moved from the historically based SFP to the regionalised payments of BPS and Greening support. As the data only shows the Beef Envelope allocation it does not mean that some businesses that are apparently receiving zero support (in 2014 or 2019) did not receive any CAP payments at all – rather the data provided for the analysis was only for farms with breeding cattle. This means

⁷ https://www.webarchive.org.uk/wayback/archive/20180529224035mp_/http://www.gov.scot/Topics/farmingrural/Agriculture/ARD-Stakeholder-Group/ARDStakeholderGroup-Meetings2017/Pillar-1-ARD-Stakeholders-Aug-17

⁸ <https://www.nfus.org.uk/news/news/uk-government-must-finally-recognise-beef-crisis>

those appearing on the *y-axis* received, or were allocated, no beef envelope payments (had zero beef activity in JAC) in 2014 (new producers). Similarly, those appearing on the *x-axis* received no beef envelope support in 2019 (withdrew).

29. In Figure 9 individual business are indicated by each dot and those below the blue centre line received lower total €Beef Envelope payments or lower €Beef Envelope per hectare payments in 2019 than received in 2014. The further below the line a business is located the greater the reduction in their payments between 2014 and 2019 (those sitting on the *x-axis* received beef envelope support in 2014 but did not in 2019). Any business above the blue centre line received higher total €Beef Envelope payments or higher €Beef Envelope per hectare payments in 2019 than in 2014 – distance above the centre line indicates larger payment increases (those sitting on the *y-axis* received no beef envelope support in 2014 but did in 2019).
30. The factors that may have led to changes in Beef Envelope payments include changing levels of cattle activity (e.g. coupled support and JAC SO allocation), changes to overall support payment rates (e.g. SFP to BPS and Greening), business expansion or contraction (i.e. more hectares) within the same business, etc. Those that appear to have withdrawn or are new between 2014 and 2019 could be restructured businesses, or businesses that have changed hands – or those genuinely removing or introducing cattle to their business.

Figure 9 Changes in €Total Beef Envelope payments and €Beef Envelope payments per hectare between 2014 and 2019



31. Figure 10 provides a similar illustration to Figure 9 of the change in allocation of the Beef Envelope between 2014 and 2019, except it is £GBP sterling. The GBP payments received by businesses in 2019 benefited from €:£ exchange rate shifts between 2014 and 2019. In 2014 the official exchange rate was £0.7773 per €1 compared to £0.89092 per €1 in 2019 – an effective currency uplift of +14.6% on payments made in £GBP over the period (which more than negated 2014-2020 CAP budgetary cuts⁹)

Figure 10 Changes in £Total Beef Envelope payments and £Beef Envelope payments per hectare between 2014 and 2019



32. Table 11 provides a summary of the number of businesses that fell into different 2014-2019 change categories. 1,826 businesses that had carried 37,112 sucklers in 2014 had dispersed their suckler herds by 2019 – with 1,209 new producers (18,827 suckler cows) by 2019. 3,323 businesses saw their suckler herd fall during the period with a combined reduction of 25% across these businesses. Equally 3,339 businesses increased their suckler herd over the period – increasing their cow numbers by 50k or 28%.

⁹ <https://www.webarchive.org.uk/wayback/archive/20150829104938/http://www.gov.scot/Topics/farmingrural/Agriculture/CAP/CAPEurope10112012/budget-facts31102012>

33. Table 11 also shows that 1,995 business that accounted for 41,917 head of finishing cattle in 2014 had stopped carrying animals in the finishing age group by 2019. During the same period there were 1,254 new businesses carrying 18,960 finishing cattle by 2019. 3,942 businesses that accounted for 51% of the finishing animals in 2014 shrunk their finishing herd sizes (by a combined 33%) and these businesses only accounted for 36% of the national finishing herd in 2019. During the same period 3,730 businesses increased their finishing herd sizes by a combined 42% - suggesting some structural rationalisation in the finishing sector during this period.

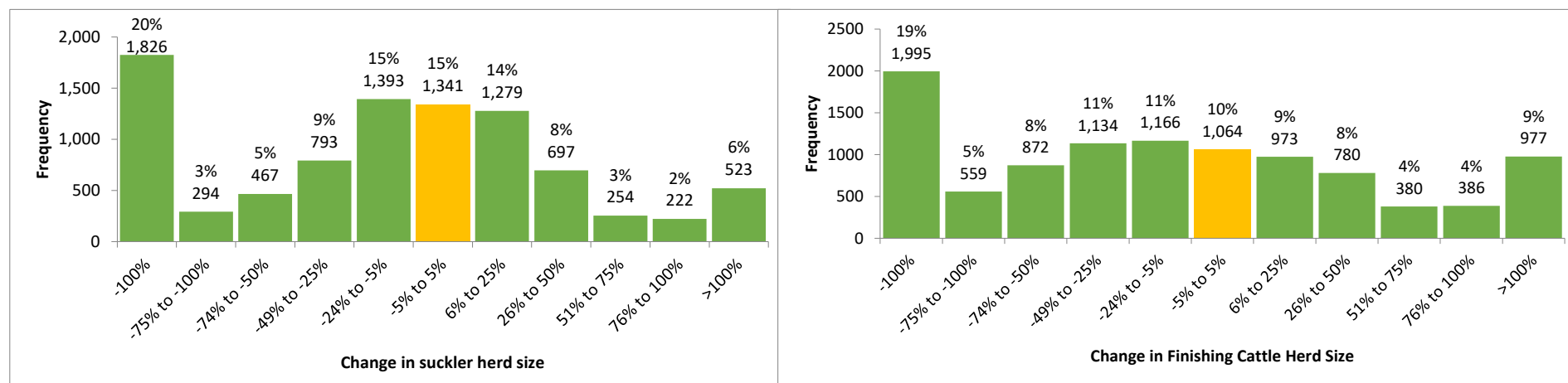
Table 11 Change in suckler and finisher businesses by change category, 2014-2019¹⁰

Suckler or Finishing Herd Change	Suckler Herd				Finisher Herd			
	Businesses	2014 Suckler Cows	2019 Suckler Cows	Suckler Change	Businesses	2014 Finishing Cattle	2019 Finishing Cattle	Finisher Change
Withdrew	1,826	37,117		-100%	1,995	41,917		-100%
Shrink	3,323	207,795	156,739	-25%	3,942	268,560	181,025	-33%
Static	601	10,866	10,866	0%	619	6,942	6,942	0%
Grow	3,339	179,964	230,248	28%	3,730	206,087	292,912	42%
New	1,209		18,827		1,254		18,960	
Scotland	10,298	435,742	416,680		11,540	523,506	499,839	

34. Figure 11 graphically shows the number of businesses in different change categories between 2014 and 2019 for suckler cows and finishing cattle. 15% of businesses had +/-5% change in their suckler herd size with 15% having herds contract by 5-24% and 14% had their suckler cow herd grow by 6-25%. 28% of businesses with suckler cows had at least a 50% reduction in cow numbers and 11% of producers increased cow numbers by at least 50%. 10% of businesses with finishing cattle had little change (+/-5%) over the period but 32% had reductions of over 50% in the number of finishing animals carried, with 17% increasing their finishing herds by over 50%. It is worth cautioning that percentage changes need further consideration as a producer with a single animal can double her number of cows with the addition of a new cow (or withdraw from production through loss of that cow) – and the breakdown of change by herd size is provided later for this reason.

¹⁰ The total number of businesses in this table do not match other tables (such as Table 8 and Table 9) due to business churn being illustrated here. This table shows businesses that had suckler cows / finishing cattle in either 2014 or 2019 and how their herd changed in that period.

Figure 11 Histogram showing the number of businesses in change categories for suckler cows and finishing cattle



35. Table 12 summarises the structural and CAP support changes that have occurred within the suckler herd during the period of the last CAP reforms and the introduction of regionalised payments alongside enhanced coupled support payments.

- Between 2014 and 2019 there was a 7% reduction in the number of businesses with suckler beef cows and a 4% reduction in the national herd. There was rationalisation in the sector as the number of businesses that were in the smaller herd size categories fell (6 to 8% reductions in the number of producers in each suckler cow size category up to 250 head) with corresponding reductions in the total number of cows in these groupings. There was small increase in the number of producers with over 250 cows – with an extra 18 producers by 2019 adding 6,439 suckler cows to the largest herds.
- The number of finishing cattle on suckler businesses fell by 3% nationally during the period with more being held on the largest farms in 2019.
- Mean support payments going to suckler producers fell by 1% over the 6-year period with 30% reduction for the handful of producers with over 750 suckler cows and 18% decrease to the producers in the 250-499 size category (notably there was a marginal increase for those in the 500-749 and smaller size categories).
- The overall average Beef Envelope per business remained pretty static overall between 2014 and 2019 but it fell by 27% in the 750+ size group and fell by 18% in the 250-499 grouping. In contrast average payments to producers in the 500-749 size grouping increased by 13% and average beef envelope payments increased for all the smaller size groupings

Table 12 Payment and structural changes by suckler producers by sucker herd sizes, 2014-2019.

	2014 Suckler Herd Size							Scotland
	1-9	10-49	50-99	100-249	250-499	500-749	750+	
Businesses 2014	2,855	3,194	1,776	1,133	116	9	6	9,089
Businesses 2019	2,617	3,007	1,649	1,050	129	14	6	8,472
<i>Change</i>	-8%	-6%	-7%	-7%	11%	56%	0%	-7%
2014 Suckler cows	11,025	83,207	125,294	165,750	38,752	5,100	6,614	435,742
2019 Suckler cows	10,142	77,578	117,591	154,464	42,826	7,801	6,278	416,680
<i>Change</i>	-8%	-7%	-6%	-7%	11%	53%	-5%	-4%
2014 Finishing cattle	61,116	77,413	81,489	105,788	33,101	3,194	6,721	368,822
2019 Finishing cattle	62,921	69,560	78,329	104,751	30,441	4,461	7,786	358,249
<i>Change</i>	3%	-10%	-4%	-1%	-8%	40%	16%	-3%
2014 Total CAP Support / business	€11,841	€29,305	€58,533	€110,207	€247,924	€316,375	€643,344	€43,095
2019 Total CAP Support / business	€12,733	€30,665	€58,576	€99,781	€203,572	€326,009	€451,707	€42,544
<i>Change</i>	8%	5%	0%	-9%	-18%	3%	-30%	-1%
2014 Beef Envelope / business	€3,975	€15,800	€35,900	€75,811	€175,773	€216,941	€557,304	€26,092
2019 Beef Envelope / business	€4,321	€16,818	€37,685	€70,287	€144,892	€246,178	€408,812	€26,253
<i>Change</i>	9%	6%	5%	-7%	-18%	13%	-27%	1%
2014 Beef Envelope per suckler cow	€1,029	€607	€509	€518	€526	€383	€506	€544
2019 Beef Envelope per suckler cow	€1,115	€652	€528	€478	€436	€442	€391	€534
<i>Change</i>	8%	7%	4%	-8%	-17%	15%	-23%	-2%
2014 Beef Envelope per £ Beef SO	€0.18	€0.31	€0.31	€0.32	€0.31	€0.25	€0.30	€0.30
2019 Beef Envelope per £ Beef SO	€0.17	€0.31	€0.30	€0.28	€0.26	€0.28	€0.19	€0.28
<i>Change</i>	-3%	2%	-2%	-13%	-17%	12%	-38%	-7%
2014 Beef Envelope per Ha	€26	€52	€87	€133	€129	€261	€470	€80
2019 Beef Envelope per Ha	€35	€50	€92	€120	€112	€174	€288	€79
<i>Change</i>	33%	-3%	6%	-10%	-13%	-33%	-39%	-1%

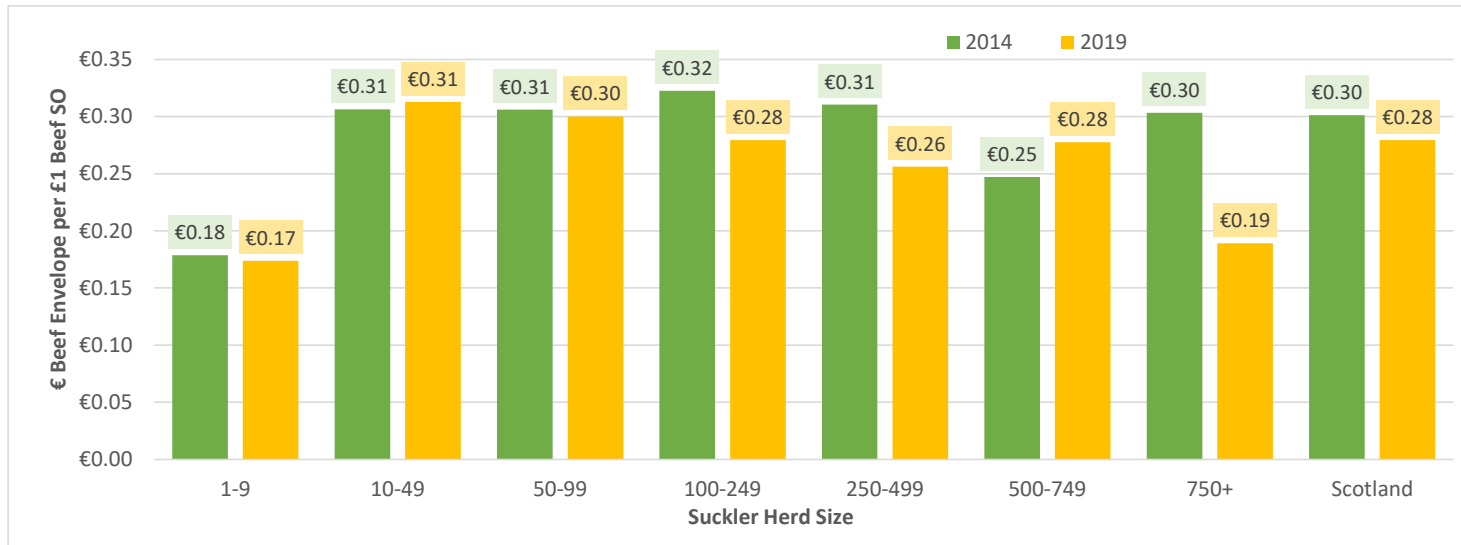
- Average beef envelope support was €544 per cow in 2014 falling marginally to €534 in 2019 (this crudely assumes no support goes to finishing animals). The under 10 cows grouping received over €1,000 per cow in beef payments (some specialist finishers are impacting this) and generally the payment per cow falls, on average, as the herd size increases – with the 750+ producers receiving €391 per cow in 2019 (down 23% from €506 in 2014).

- On average beef envelope support per £1 of beef standard output was €0.28 in 2019 (down 7% from 2014) with the lowest rates in the 1-9 category (reiterating that per suckler cow figures in this grouping were

influenced by finishers with only a few sucklers). The largest producers saw their rate of support fall 38% from €0.30 in 2014 to €0.19 in 2019. These changes are graphically illustrated in Figure 12.

- On average beef envelope support per hectare remained static at about €80/ha although there were quite significant decreases in some size categories. In the largest (750+) group beef envelope payments fell 39% from €470/ha to €288/ha (due to lower support payments but also a 19% in the area under their control). Within the 500-750 grouping the average payment rate per hectare fell 33% despite increases in payments using other metrics and this is due to payments being diluted over 70% more land per producer (165% increase in the total area of farms in this group). In the smallest size grouping the land area per business fell by 18% causing some of the increase in per ha support.

Figure 12 Beef envelope support per £1 of beef standard output by suckler herd size groups, 2014 and 2019



36. Similarly to Table 12 a summary of changes in the structure of the finishing sector and payments made to producers is provided in Table 13. It should be noted that some of the financial figures for the finishing herd will be an under-estimate as payment data was not available for some specialist finishers as they did not have breeding cows on the data extraction date.

- The number of businesses with ‘finishing cattle’ fell by 7% between 2014 and 2019 - with the decline exclusively in the smaller herds (these are not specialist finishers – rather suckler cow producers that have store animals over a year old – or may keep the odd beast for home finishing and consumption). This suggests that some smaller producers are selling stock on at an earlier age (perhaps in response to changing specialist finisher needs arising from the 2016 introduction slaughter weight penalties). At the opposite scale there has been an increase in the number of specialist finishers with over 500 head of cattle with a 22% increase in the number of finishing cattle in this size grouping.
- Total support payments per finishing business remained relatively stable at €36,000. However, the specialist finishers (over 100 head) all saw total payments fall with the largest producers (750+) having a 47% reduction in support on average with over 20% average reduction for herd size groupings of over 250 head of cattle.
- Similarly, total support Beef Envelope support per finishing business remained static at €21k across Scotland with the largest specialist finishing businesses seeing support reductions per business on average (despite increased cattle numbers).

Table 13 Payment and structural changes by producers with finishing cattle by finisher herd sizes, 2014-2019.

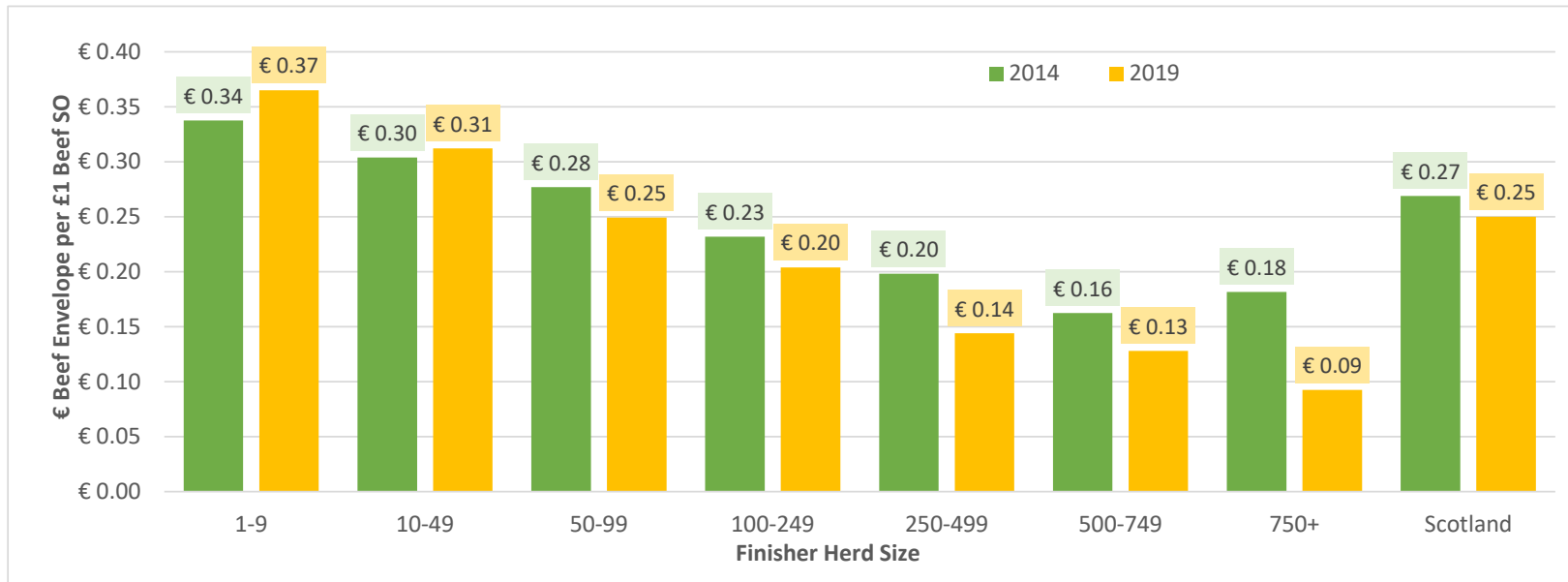
Values	2014 Finisher Herd Size							Scotland
	1-9	10-49	50-99	100-249	250-499	500-749	750+	
Businesses 2014	4,789	3,532	1,693	1,141	218	41	28	11,442
Businesses 2019	4,466	3,332	1,468	1,026	219	47	37	10,595
<i>Change</i>	-7%	-6%	-13%	-10%	0%	15%	32%	-7%
2014 Suckler cows	59,123	155,966	102,244	85,356	22,251	3,779	7,023	435,742
2019 Suckler cows	54,857	147,030	95,010	83,650	22,421	6,006	7,706	416,680
<i>Change</i>	-7%	-6%	-7%	-2%	1%	59%	10%	-4%
2014 Finishing cattle	13,380	88,804	119,145	168,374	73,069	24,401	36,333	523,506
2019 Finishing cattle	12,731	81,520	104,703	150,904	75,605	28,055	46,321	499,839
<i>Change</i>	-5%	-8%	-12%	-10%	3%	15%	27%	-5%
2014 Total CAP Support / business	€13,641	€38,576	€56,536	€76,574	€112,740	€129,983	€237,593	€36,814
2019 Total CAP Support / business	€15,214	€39,807	€52,946	€70,343	€89,881	€100,872	€126,047	€35,825
<i>Change</i>	12%	3%	-6%	-8%	-20%	-22%	-47%	-3%
2014 Beef Envelope / business	€6,702	€22,691	€33,685	€43,050	€64,766	€74,187	€191,574	€21,055
2019 Beef Envelope / business	€7,680	€24,414	€33,520	€41,909	€49,015	€68,665	€97,137	€21,275
<i>Change</i>	15%	8%	0%	-3%	-24%	-7%	-49%	1%
2014 Beef Envelope per finishing head	€543	€514	€558	€575	€635	€805	€764	€553
2019 Beef Envelope per finishing head	€625	€553	€518	€514	€479	€537	€466	€541
<i>Change</i>	15%	8%	-7%	-11%	-25%	-33%	-39%	-2%
2014 Beef Envelope per £ Beef SO	€0.34	€0.30	€0.28	€0.23	€0.20	€0.16	€0.18	€0.27
2019 Beef Envelope per £ Beef SO	€0.37	€0.31	€0.25	€0.20	€0.14	€0.13	€0.09	€0.25
<i>Change</i>	8%	3%	-10%	-12%	-27%	-21%	-49%	-7%
2014 Beef Envelope per Ha	€29	€65	€120	€123	€147	€154	€315	€72
2019 Beef Envelope per Ha	€38	€65	€97	€122	€108	€93	€144	€71
<i>Change</i>	31%	1%	-19%	-1%	-27%	-40%	-54%	-1%

- When the beef envelope is allocated entirely to finishing animals (this does not happen in reality as farmers will utilise payments for suckler cows as well – although suckler numbers are modest in the largest finisher groupings) each animal was supported by €541 beef support in 2019 (relatively static from 2014). However, all the large finishers (over 250 head) have seen support per head of cattle fall by over 25% by 2019 - with the 750+ grouping contending with 49% decrease from €764 to €466.
- The level of beef support per £1 beef standard output on these businesses with finishing animals fell by 7% across Scotland but again the large specialist finishers had to contend with

decreases of over 20% - with support levels falling from €0.18 to €0.09 per £1 beef output between 2014 and 2019. Producers in the 250 -499 size grouping had average payments fall by 27% from €0.20 to €0.14. This is illustrated in graphical form in Figure 13.

- Beef payment rates per hectare also fell significantly in the largest finisher size groupings – more than 40% decline for herds over 500 on average – due, in part, to increased total area on these farms (the average farm size of those in 500-749 head grouping increased by 53% on average – with average farm size increasing from 482ha to 781ha – with stocking densities declining).

Figure 13 Beef envelope support per £1 of beef standard output by finisher herd size groups, 2014 and 2019

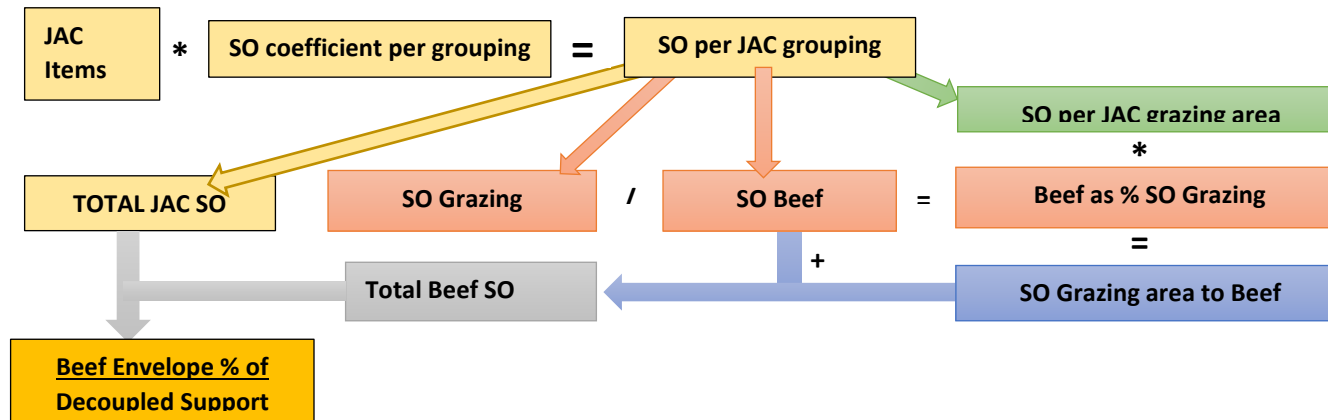


ANNEX 1 – Methodology for estimating the Beef Envelope using Standard Outputs

37. Pre-2005 the CAP had sector specific envelopes, which meant farmers were paid on numbers of cows / calves, etc. With significant decoupling of CAP support from production, firstly to the Single Farm Payment from 2005 and then the Basic Payment Scheme and Greening from 2015 there is less certainty of the extent of farm sectoral / enterprise support within the CAP. As the majority of support is technically decoupled from production¹¹ in order to estimate the extent of sectoral envelopes this requires a reallocation of support monies based on enterprise mix within a farm. The most consistent method of allocating support payments is through the use of Standard Outputs which effectively monetises agricultural production based on standardised output coefficients. For the purpose of this exercise 2013 standard outputs were utilised for both 2014 and 2019 JAC data in order to provide consistency across the analysis.
38. Figure 14 provides the conceptual framework developed for allocating decoupled support payments to farm enterprise categories, in this case to appropriately allocate decoupled Pillar I and LFASS support to an imaginary Scottish Beef Envelope. SOs were calculated for SO groupings as per RESAS coefficients, with beef and dairy specifically separated out in cattle enterprises. All livestock grazing SOs were added and then allocated based on the proportion of beef SO to total grazing livestock SO (dairy, beef, sheep). Using the Grazing SO allocated to Beef plus the direct Beef SO the Total Beef SO was then divided by Total SO for all JAC Items to provide an estimate of the proportion of decoupled support that should be allocated to the beef envelope.

¹¹ A farmer does not need to utilise support received to fund farming enterprises and provided they meet support payment obligations is free to alter farming systems and practices.

Figure 14 Illustrative method for allocation of decoupled support to enterprises



39. Using RESAS JAC items and SO Coefficients¹² the calculation of new SO groupings was conducted as follows:

(a) Grazing Livestock Standard Output

=SO Beef cows + SO Beef Heifers 2 years and over not yet calved + SO Cattle 1 year + SO Dairy cows + SO Dairy Heifers 2 years and over not yet calved + SO Ewes + SO Female cattle 1-2 years + SO Male cattle 1-2 years + SO Male cattle 2 years and over + SO Other sheep

(b) Grazing/fodder Standard Output

=SO Permanent grass + SO Rough grazing + SO Fodder roots and brassicas +SO Temporary grass + SO Green maize for stockfeed + SO Other stockfeeding crops

(c) Beef Standard Output

=SO Beef cows + SO Beef Heifers 2 years and over not yet calved + SO Cattle 1 year + SO Female cattle 1-2 years + SO Male cattle 1-2 years + SO Male cattle 2 years and over

***NB dairy heifers were removed from younger female cattle categories

¹² <https://www2.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/Publications/SOCoeffs>

(d) **Dairy Standard Output** (excluding BRNS where total breeding dairy cows <50)

=SO Dairy cows + SO Dairy Heifers 2 years and over not yet calved + SO Dairy Heifers 1 year +SO Dairy Heifers 1-2 years

****NB All dairy heifers over 2 were included as they work out as 20% of dairy cow numbers.....dairy heifers 1-2 and <1 are each 31% of cow numbers so were all included. This reflects a 3 year cow replacement rate and therefore likely over allocates younger dairy calves to the dairy breeding sector.

(e) **Sheep Standard Output**

= SO Ewes + SO Other sheep

40. Grazing was allocated to beef, dairy and sheep envelopes through relevant % of **Grazing Livestock Standard Output** (SO Area Livestock) attributed to beef/dairy/sheep. This then determines the proportion of decoupled support to allocate to each farming system:

- i. Beef Envelope per farm gives SO (%) from beef

Beef Envelope = SO Beef + ((SO Beef/SO Grazing Livestock) * SO Grazing/fodder)

Beef Envelope % = (SO Beef + ((SO Beef/SO Grazing Livestock) * SO Grazing/fodder)) / Total SO

- ii. Dairy Envelope per farm gives % of SO from dairy

Dairy Envelope = SO Dairy + ((SO Dairy/ SO Grazing Livestock) * SO Grazing/fodder)

Dairy Envelope % = (SO Dairy + ((SO Dairy/ SO Grazing Livestock) * SO Grazing/fodder)) / Total SO

41. For the creation of the analytic database, JAC data for 2014 and 2019 was used to create a list of unique BRNs (Business Reference Numbers) that had cattle in either 2014 and/or 2019. Selected JAC variables were then joined to these unique BRNs for both 2014 and 2019 and percentage differences calculated for paired variables (including the newly calculated beef and dairy envelopes based on SO variables). A number of categorical variables (e.g. herd size) were then created to ease analysis. Using this new datatbase, CAP support payment data was joined to the BRNs where payments had been made.

42. In order to calculate the extent of the beef and dairy envelopes any coupled support was allocated to the appropriate system (beef / sheep) and the allocation of decoupled CAP support was allocated based on the following envelope calculations:

- **Beef Envelope Payments**

2014 = SBCS_PAID_GBP + ((SFPS_PAID + FDRI_PAID + LFASS_PAID)*Beef Envelope %)

2019 = BES PAID + CATTLE ISLAND PAID + CATTLE MAINLAND PAID + ((BPS PAID + GREENING PAID + LFASS PAID + YFP PAID) * Beef Envelope %)

- **Dairy Envelope Payments**

2014= (SFPS_PAID +FDRI_PAID +LFASS_PAID) * Dairy Envelope%

2019 = (BPS PAID +GREENING PAID +LFASS PAID +YFP PAID) * Dairy Envelope %

43. Once the payments envelopes were calculated in € and £ then further variables were calculated to aid interpretation (payments per hectare, payments per unit of standard output, etc.) and changes in paired variables between 2014 and 2019 were calculated. Various measures of distribution were calculated and graphed to ease interpretation.

ANNEX 2 - Beef envelope – additional data

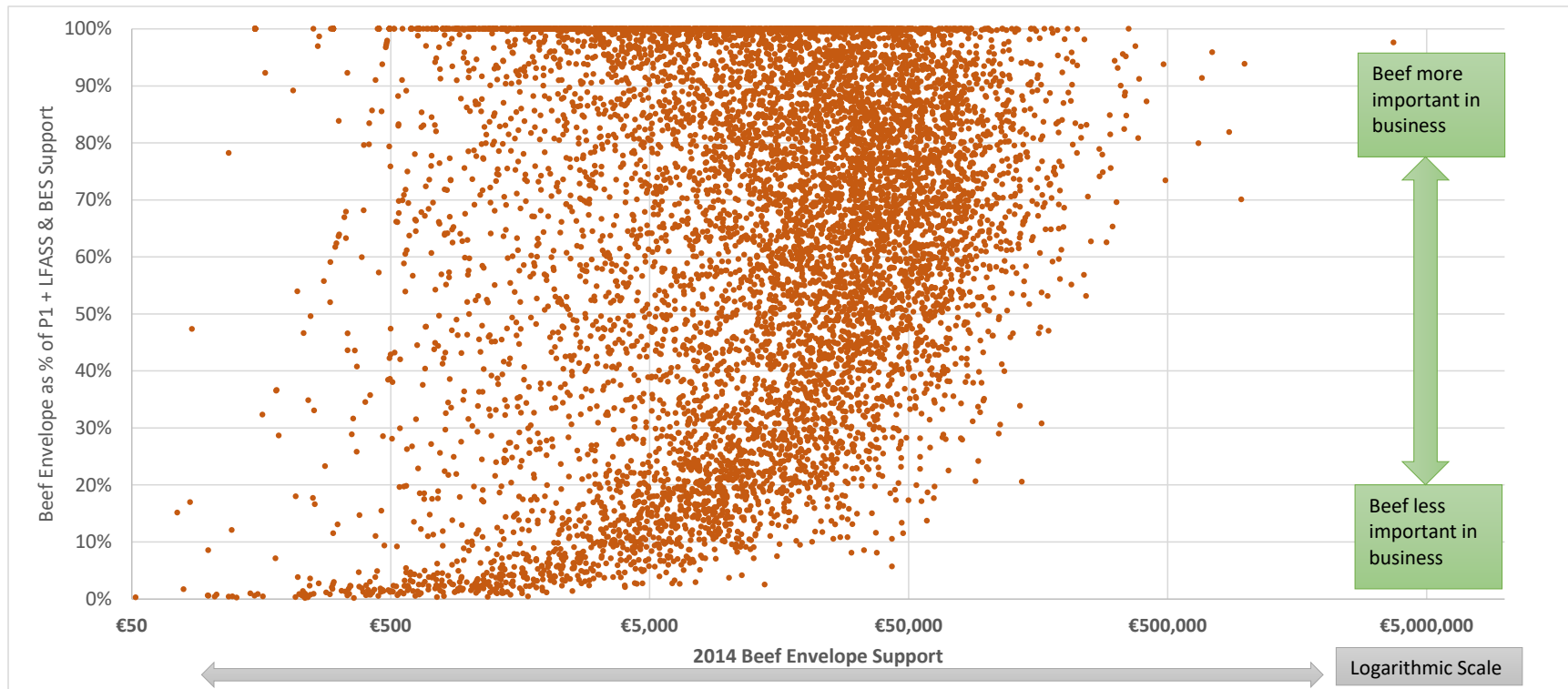
Table 14 Businesses receiving 2019 Beef Envelope CAP Payments by suckler herd size and region

Suckler Herd Size	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
None	13	14	164	17	38	21	15	10	204	19	515
1-9	45	43	226	19	203	538	353	25	394	62	1,908
10-49	154	125	319	72	477	534	286	58	643	190	2,858
50-99	148	56	248	42	327	156	125	40	360	128	1,630
100-249	105	15	196	33	222	91	80	39	166	96	1,043
250-499	21	4	31	7	27	12	3	8	9	4	126
500-749	-	-	5	1	4	2	-	1	-	1	14
750+	3	-	3	-	-	-	-	-	-	-	6
Scotland	489	257	1,192	191	1,298	1,354	862	181	1,776	500	8,100

Table 15 2019 Beef Envelope CAP Payments by suckler herd size and region

Suckler Herd Size	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
None	£35,805	£64,738	£697,416	£156,947	£394,376	£71,154	£58,128	£81,062	£1,047,880	£74,574	£2,682,079
1-9	£195,871	£289,214	£1,581,842	£120,684	£1,036,120	£2,196,318	£1,594,275	£161,984	£2,607,096	£291,203	£10,074,609
10-49	£2,558,484	£2,001,268	£5,151,537	£863,287	£6,492,464	£8,115,450	£4,912,900	£831,641	£11,367,413	£2,761,053	£45,055,499
50-99	£5,524,166	£2,015,660	£8,748,490	£1,084,691	£9,496,589	£6,303,905	£4,932,648	£1,183,310	£12,430,002	£3,643,384	£55,362,845
100-249	£6,531,272	£1,018,664	£11,917,612	£1,593,107	£13,241,093	£6,744,719	£5,872,842	£2,414,397	£11,252,103	£5,164,488	£65,750,298
250-499	£2,560,348	£942,546	£4,201,489	£549,513	£2,738,207	£1,539,968	£404,015	£917,689	£2,380,485	£417,851	£16,652,111
500-749			£1,120,528	£204,648	£752,505	£475,892		£216,164		£300,522	£3,070,260
750+	£1,018,522		£1,166,794								£2,185,316
Scotland	£18,424,468	£6,332,090	£34,585,709	£4,572,877	£34,151,354	£25,447,406	£17,774,809	£5,806,248	£41,084,980	£12,653,076	£200,833,018

Figure 15 Plot of 2014 beef support envelope payments against proportion of total P1 & LFASS going to the beef envelope



ANNEX 3 – Suckler cow distribution – detailed tables

Table 16 Businesses with Suckler Cows (JAC Item cts305) by robust farm type 2019

Farm Type	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
Specialist cereals	22	6	4	14	49	5	-	14	1	1	116
General cropping	15		2	26	42	22	-	9	1	109	226
Specialist horticulture & permanent crops	-	-	1	2	4	4	-	-	-	8	19
Specialist pigs	-	-	-	-	5		-	1	1	2	9
Specialist poultry	2	-	6	-	3	1	-	-	5	1	18
Specialist dairy	3	15	119	6	8	4	8	4	113	3	283
LFA Cattle & Sheep	356	196	863	39	755	1,354	895	100	1,502	244	6,304
Non-LFA Cattle & Sheep	49	45	106	53	249	28	-	27	94	63	714
Mixed holdings	83	28	19	56	316	83	14	41	32	111	783
Scotland	530	290	1,120	196	1,431	1,501	917	196	1,749	542	8,472

Table 17 Number of Suckler Cows (JAC Item cts305) by robust farm type 2019

Farm Type	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
Specialist cereals	958	486	136	462	878	86	-	611	4	2	3,623
General cropping	790	-	47	1,944	2,334	691	-	383	72	5,620	11,881
Specialist horticulture & permanent crops	-	-	119	83	411	8	-	-	-	436	1,057
Specialist pigs	-	-	-	-	418	-	-	1	68	18	505
Specialist poultry	424	-	519	-	536	8	-	-	92	135	1,714
Specialist dairy	6	324	794	83	33	10	86	40	715	36	2,127
LFA Cattle & Sheep	27,671	7,994	68,143	1,449	42,758	37,423	29,165	8,653	66,934	13,990	304,180
Non-LFA Cattle & Sheep	3,857	1,399	4,711	2,725	11,559	1,074	-	1,110	3,422	2,869	32,726
Mixed holdings	8,546	1,105	730	5,878	23,305	5,495	312	3,527	1,283	8,686	58,867
Scotland	42,252	11,308	75,199	12,624	82,232	44,795	29,563	14,325	72,590	31,792	416,680

Table 18 Businesses with Suckler Cows (JAC Item cts305) by suckler herd size, 2019

Suckler Herd Size	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
1-9	78	76	297	38	339	684	419	45	528	113	2,617
10-49	168	139	333	75	506	556	290	63	678	199	3,007
50-99	152	56	252	42	330	156	125	40	368	128	1,649
100-249	108	15	198	33	224	91	80	39	166	96	1,050
250-499	21	4	32	7	28	12	3	8	9	5	129
500-749	-	-	5	1	4	2	-	1	-	1	14
750+	3	-	3	-	-	-	-	-	-	-	6
Scotland	530	290	1,120	196	1,431	1,501	917	196	1,749	542	8,472

Table 19 Number of Suckler Cows (JAC Item cts305) by suckler herd size, 2019

Suckler Herd Size	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
1-9	280	299	1,019	167	1,212	2,870	1,665	149	1,994	487	10,142
10-49	4,824	3,661	9,274	1,972	12,964	12,997	6,904	1,666	17,441	5,875	77,578
50-99	11,087	3,954	18,323	2,959	23,450	11,261	8,654	2,909	25,739	9,255	117,591
100-249	16,153	1,977	29,345	4,785	33,258	13,055	11,433	6,172	24,451	13,835	154,464
250-499	7,296	1,417	10,830	2,182	9,189	3,559	907	2,853	2,965	1,628	42,826
500-749	-	-	2,742	559	2,159	1,053	-	576	-	712	7,801
750+	2,612	-	3,666	-	-	-	-	-	-	-	6,278
Scotland	42,252	11,308	75,199	12,624	82,232	44,795	29,563	14,325	72,590	31,792	416,680

ANNEX 4 – Finishing livestock – detailed tables

Table 20 Number of businesses with finishing cattle (JAC Items cts303, cts304, cts310 & cts311) by robust farm type, 2019

Farm Type	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
Specialist cereals	29	10	4	16	91	12	-	23	1	4	190
General cropping	23	-	3	34	64	22	-	13	4	148	311
Specialist horticulture & permanent crops	-	-	1	2	4	2	-	-	-	8	17
Specialist pigs	-	-	1	-	9	-	-	1	1	2	14
Specialist poultry	2	-	6	-	6	1	-	-	8	1	24
Specialist dairy	9	26	262	11	15	7	13	10	261	9	623
LFA Cattle & Sheep	367	201	940	43	843	1,185	819	106	1,603	250	6,357
Non-LFA Cattle & Sheep	55	60	138	58	370	33	-	33	127	68	942
Mixed holdings	99	37	38	77	476	91	16	49	52	132	1,067
Scotland	584	334	1,393	241	1,878	1,353	848	235	2,057	622	9,545

Table 21 Number finishing cattle (JAC Items cts303, cts304, cts310 & cts311) by robust farm type, 2019

Farm Type	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
Specialist cereals	993	309	48	365	3,186	120	-	728	1	153	5,903
General cropping	1,518	-	68	2,468	3,369	489	-	580	62	8,056	16,610
Specialist horticulture & permanent crops	-	-	89	16	279	39	-	-	-	184	607
Specialist pigs	-	-	84	-	636	-	-	6	88	12	826
Specialist poultry	93	-	476	-	548	4	-	-	308	153	1,582
Specialist dairy	1,482	3,233	31,768	1,052	1,166	672	760	757	23,044	761	64,695
LFA Cattle & Sheep	20,373	6,654	60,660	2,360	39,578	17,403	21,636	8,098	56,785	7,017	240,564
Non-LFA Cattle & Sheep	4,319	2,374	13,844	4,026	43,926	1,793	-	1,393	9,614	2,628	83,917
Mixed holdings	8,628	1,836	3,617	9,213	41,371	3,882	112	4,486	3,788	8,202	85,135
Scotland	37,406	14,406	110,654	19,500	134,059	24,402	22,508	16,048	93,690	27,166	499,839

Table 22 Number of businesses with finishing cattle (JAC Items cts303, cts304, cts310 & cts311) by finishing herd size, 2019

Head of Finishing Cattle	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
1-9	145	140	280	55	512	905	431	65	677	206	3,416
10-49	240	115	495	74	718	320	265	86	777	242	3,332
50-99	101	37	284	57	318	83	104	42	339	103	1,468
100-249	74	35	254	39	231	33	46	28	224	62	1,026
250-499	17	5	60	13	61	12	2	9	34	6	219
500-749	2	1	14	-	18	-	-	3	6	3	47
750+	5	1	6	3	20	-	-	2	-	-	37
Scotland	584	334	1,393	241	1,878	1,353	848	235	2,057	622	9,545

Table 23 Number finishing cattle (JAC Items cts303, cts304, cts310 & cts311) by finishing herd size, 2019

Head of Finishing Cattle	Borders	Central	Dumfries & Galloway	Fife	Grampian	Highland	Islands	Lothian	Strathclyde	Tayside	Scotland
1-9	619	546	1,136	231	1,989	2,969	1,381	240	2,722	898	12,731
10-49	6,004	2,676	12,827	1,726	17,503	6,989	6,580	2,240	19,016	5,959	81,520
50-99	7,289	2,531	20,974	4,115	22,440	5,591	7,353	3,022	24,007	7,381	104,703
100-249	10,721	5,053	37,730	6,083	34,314	4,545	6,418	3,780	33,019	9,241	150,904
250-499	5,847	1,691	20,399	4,048	22,175	4,308	776	2,993	11,464	1,904	75,605
500-749	1,032	642	8,594	-	10,753	-	-	1,789	3,462	1,783	28,055
750+	5,894	1,267	8,994	3,297	24,885	-	-	1,984	-	-	46,321
Scotland	37,406	14,406	110,654	19,500	134,059	24,402	22,508	16,048	93,690	27,166	499,839

Glossary of acronyms and terms

- **Standard Outputs (SOs):** used to attach standardised monetary outputs to individual crops and livestock types that are used to classify farm types in accordance with European Commission regulations.
- **SG-RPID:** Scottish Government – Rural Payment and Inspections Division
- **CAP:** Common Agricultural Policy
- **Beef Envelope:** total amount of support allocated to beef enterprises at farm level and to the beef industry at national level (Scottish Envelope)
- **LFA:** Less Favoured Areas are defined by: (i) The presence of poor land of poor productivity, which is difficult to cultivate and with a limited potential which cannot be increased except at excessive cost, and which is mainly suitable for extensive livestock farming. (ii) lower than average production, compared to the main indices of economic performance in agriculture. (iii) a low or dwindling population predominantly dependent on agricultural activity, the accelerated decline of which could cause rural depopulation¹³
- **RESAS:** Rural and Environment Science and Analytical Services
- **JAC:** June Agricultural Census
- **Pillar I:** Direct support of the CAP funded through the European Agricultural Guarantee Fund
- **Dairy envelope:** total amount of support allocated to dairy enterprises at farm level and to the dairy industry at national level (Scottish Envelope)
- **Suckler Cow** – suckler cows are specifically kept for the purpose of beef production as opposed to dairy cattle which are kept for the primary purpose of milk production where beef is a secondary product. Scotland is distinctive in its high proportion of prime cattle being sourced from its suckler herd.
- **LFASS :** Less Favoured Area Support Scheme
- **BES:** Beef Efficiency Scheme
- **CTS:** Cattle Tracing System of the British Cattle Movement Service
- **Finishing Cattle:** Animals that are not destined for breeding but are being prepared for slaughter at ‘prime’ age and specification. For statistical purposes this includes animals over 1 year that are not being used for breeding.
- **SFP:** Single Farm Payment
- **BPS:** Basic Payment Scheme

¹³ Definitions from: <https://data.gov.uk/dataset/a1ba43dd-569c-47e9-9623-21664aaf49ff/less-favoured-areas>



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