Llywodraeth Cymru
Welsh Government

Agriculture in Wales

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Agriculture in Wales

Introduction

This evidence pack is being published alongside the Minister for Environment, Energy and Rural Affairs' Written Statement setting out the Welsh Government's response to the *Brexit and our Land* consultation.

The purpose of this evidence pack is to set out objectively the current state of play of the agricultural sector in Wales. This evidence pack provides a source document which will help inform the development of the Welsh Government's proposals to reform the farm payments system following the withdrawal of the UK from the European Union.

It is important that the Welsh Government is transparent and open in the evidence it is using as it develops these proposals, and this publication contributes towards that. This is the beginning of the process, and we will be undertaking more detailed analyses as our policy proposals are developed. In particular, we will be constructing a series of representative farm models to estimate the range of financial and economic impacts of our proposals on farms of different types, sizes and locations in Wales. This will be an iterative process and this work will contribute in particular to a broader range of impact assessments that will be undertaken in due course. As part of this, the current system of Basic Payment Scheme (BPS) payments in Wales, will act as a comparison against which to assess our policy proposals (this is the "policy counterfactual") and the evidence in this paper will contribute to this.

This evidence pack covers five broad areas: the contribution of the agricultural sector in Wales to the Welsh economy and society; the importance of farming in the context of Welsh land and the natural environment; the structure and performance of Welsh farms; the role of the Basic Payment Scheme in Wales; and the contribution of Welsh agriculture to trade in major agricultural commodities.

Although this is not a consultation document, we would welcome any comments you may have on this evidence pack. Please send any views to:

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Chapter 1: The contribution of agriculture in Wales

Introduction

1. This chapter considers the impact of agriculture in Wales. We use both Wales-specific and UK-wide data to explore the direct contribution of agriculture to the Welsh economy, as well as the linkages between agriculture and tourism and the food and drink sector in Wales. We also look at employment, and the links between agriculture and the Welsh language.

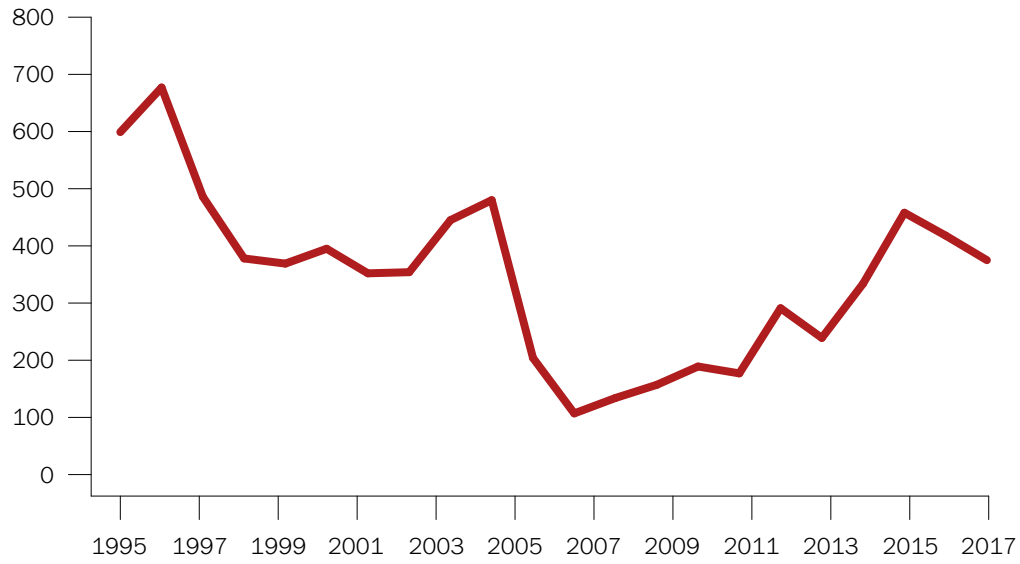
1.1 Agricultural output and contribution to the Welsh economy

2. Agriculture in Wales generated an estimated Gross Value Added (GVA)[1] of £457 million in 2017[2]. This represented 0.8% of the total GVA for Wales for that year[3] and 4% of the total UK GVA for agriculture. Agriculture represents a higher percentage of the Wales economy than it does for the UK as a whole (0.6%).

3. Agricultural GVA in Wales fell 82% between 1995 and 2006. This fall was during the export ban (1996 to 2005) on beef and cattle from the UK as a result of the BSE crisis. Whilst there were notable effects on the beef sector at the time, there were also important shifts in the value of output of some other sectors - including milk and some other livestock outputs. The drop was particularly large between 2004 and 2005. Prior to 2005, direct support to agriculture under the Common Agricultural Policy (CAP) was coupled with production. This meant that direct payments counted as output and therefore contributed to GVA. In 2005, direct support was decoupled from production and no longer included in agricultural GVA.

4. Since 2006, agricultural GVA has experienced growth. A similar trend has been observed across the UK as a whole.

Figure 1.1: Gross value added for agriculture in Wales, 1995 to 2017 (at basic prices, £m)[(a)]



(a) GVA at Basic Prices = value of output – intermediate consumption + net tax.

Source: Welsh Government/Defra

1 Gross value added is the value generated by any unit engaged in the production of goods and services.

2 Aggregate agricultural output and income, 2017.

3 These figures do not include secondary processing of Welsh agricultural produce in Wales which, if considered, would make the contribution of Welsh agriculture to GVA larger.

1.1.2 Intermediate consumption

5. Intermediate consumption reflects the goods and services used in the running of a business. It is an indicator of both the key costs of the business, and the industries that a business supports through its spending.

6. Agriculture supports Wales through consumption of materials and goods necessary in running the farm business. 2017 saw agriculture generate a forecasted intermediate consumption of £1,138 million.

7. Whilst agriculture makes a relatively small contribution to GVA, it is an economically active industry through its expenditure. We look later at the evidence concerning economic multipliers for the agricultural sector in Wales.

8. Figure 1.2 shows the components of agricultural intermediate consumption in 2017. These represent both the key costs, and the industries that agriculture supports.

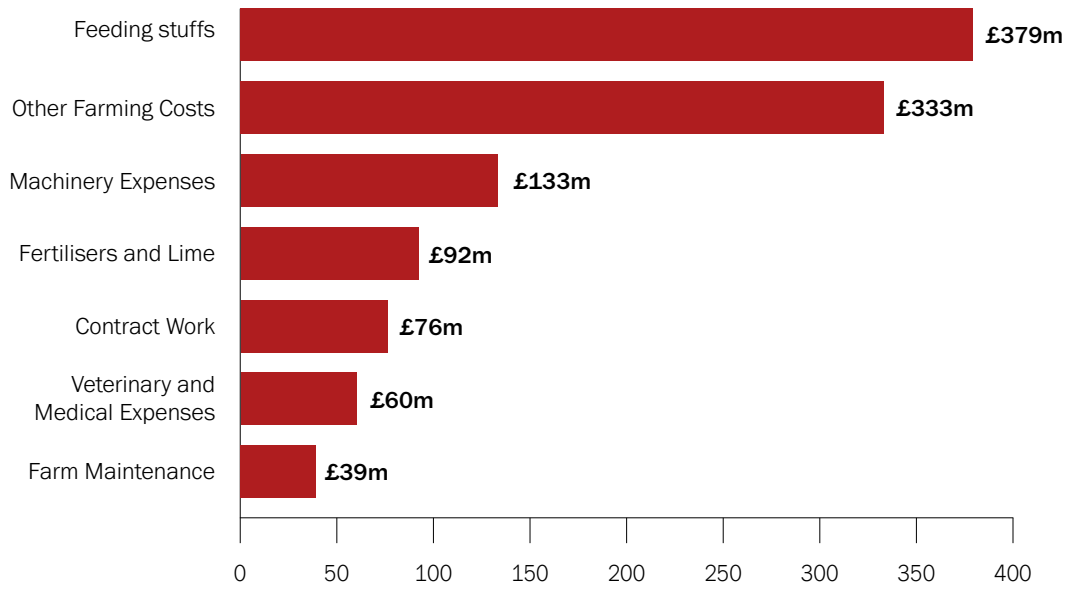
9. Intermediate consumption in agriculture in Wales increased by 9% in 2017. This was linked to a 13% increase in the intermediate consumption of feeding stuffs.

10. For a farm business this is an increase in business running costs.

1.1.3 Output

11. The total output[4] for Welsh agriculture in 2017 was forecasted to be £1,594 million. Table 1.1 shows the contribution of each type of output and reflects the focus of farming in Wales on livestock and livestock products. Of livestock, cattle were responsible for the largest share of output and milk products had the highest share of product output.

Figure 1.2: Components of intermediate consumption in agriculture in Wales, 2017 forecast (£m)



Source: Agricultural Output and Income, 2017

[4] Value of goods and services produced by a business.

Table 1.1: Output from Agriculture 2013 to 2017

£million				Calendar Years	
	2013	2014	2015	2016 (p) provisional	2017 (f) forecast
Outputs					
1. Cereals	19	18	21	21	22
2. Other Crops	8	8	7	8	8
3. Potatoes	11	10	13	17	16
4. Horticulture	37	41	42	51	51
5. LIvestock – *of which*	690	709	686	696	722
cattle	373	363	370	376	407
Sheep	240	272	257	267	264
Pigs	6	7	5	5	6
Poultry	71	67	52	47	45
6. Livestock Products – *of which*	565	610	499	438	581
Milk and Milk Products	506	549	440	381	515
Eggs	48	48	43	41	52
Clip Wool	7	7	6	5	3
7. Capital Formation in Livestock	82	89	79	63	63
8. Other and Inseparable Secondary Agricultural Activities	125	133	128	127	130
9. Gross Output at basic prices (1+2+3+4+5+6+7+8)	**1,537**	**1,619**	**1.475**	**1,420**	**1,594**

Source: Aggregate agricultural output and income, 2017

1.1.4 Total Income from Farming

12. Total Income from Farming (TIFF) represents business profits and remuneration for work done by unpaid workers (e.g. business owners). It includes income from subsidies.

13. TIFF therefore gives an indication of the total income from agricultural output, subsidies and diversified activity of farmers in a given year.

14. The total income from farming in Wales in 2017 was forecasted to be £276 million.

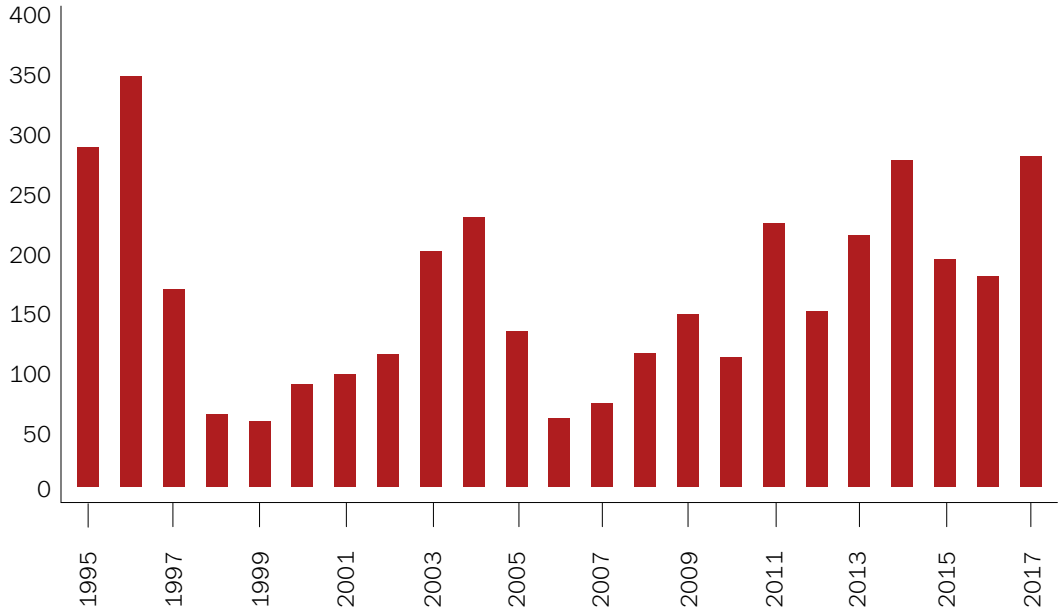
15. This represented a 56% increase from 2016, and after two years of low TIFF, a return to levels in line with 2014. As Figure 1.3 shows, fluctuation such as this is common.

16. On a per hectare basis, this represented an income of £148 per hectare. Within the UK, this was higher than Scotland (£119 per hectare) but low in comparison to England (£426 per hectare) and Northern Ireland (£449 per hectare).

17. TIFF per hectare also fluctuates. For 2016, TIFF in Wales was estimated to be £90 per hectare and for Northern Ireland it was estimated at £236 per hectare.

18. Since 1995, TIFF in Wales has increased 3%. During the same period, TIFF for the UK as a whole has increased 24%.

Figure 1.3: Total Income from Farming in Wales, current prices, 1995 to 2017 (£m)



Source: Welsh Government/Defra

1.2 Agricultural productivity

19. Total factor productivity measures the use of inputs in relation to outputs and gives an indication of how well the industry uses its resources.

20. Increasing productivity helps a farm business to increase profits.

21. Data for total factor productivity is only available at a UK-level, but shows a long-term trend for a slow but steady increase in total factor productivity. Since 1973 total factor productivity has increased by over 70%, driven by a 37% increase in the volume of outputs and a 20% fall in the volume of inputs.

22. Of the inputs[5], labour productivity has seen the largest improvement since 1973. This has been historically due to a reduction in the number of people employed in agriculture, but in recent years has been linked to increased labour output. Land productivity has seen the second largest improvement in the same period.

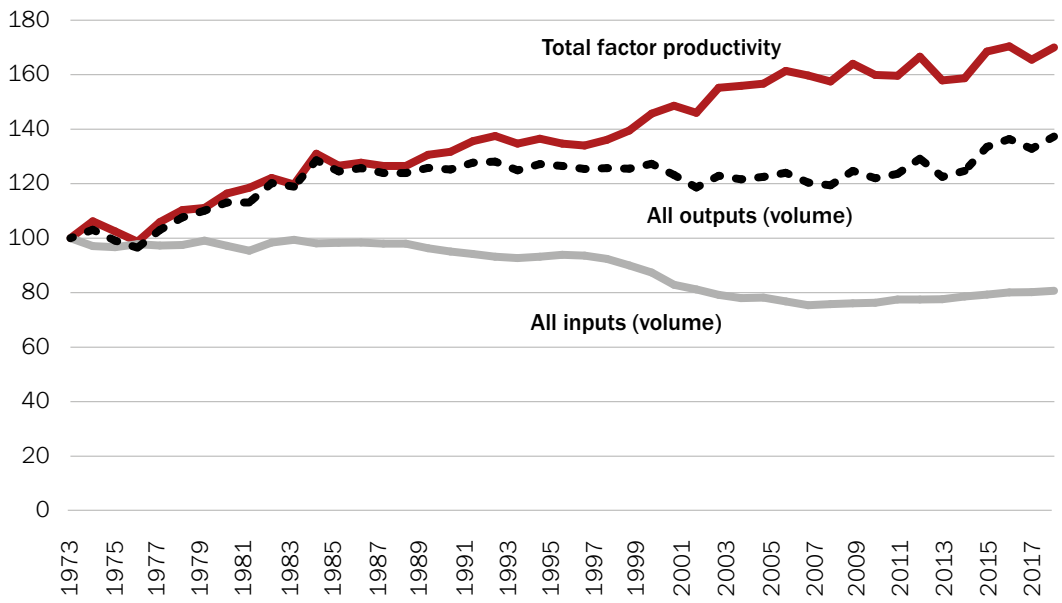
23. In the period 2006-16, the UK had the 5th smallest annual average change (at 0.2%) out of the EU 28 in total factor productivity in agriculture. This compares to figures of 0.5% for Ireland and France, 0.8% for Sweden, and -0.6% for Germany.

24. Between 2016 and 2017, total factor productivity of agriculture in the UK increased 2.8%. This was driven by an increase in outputs of 3.6% which was offset with a slight increase in inputs (0.7%).

25. Animal feed as an input showed a volume increase of 3.1% between 2016 and 2017. This was the largest increase of all inputs. For a farm business this reflects increased use of feed and/or increased costs.

26. The largest decrease in inputs was from fertilisers. This input decreased 9.7% in volume between 2016 and 2017.

Figure 1.4: UK Total Factor Productivity, 1973–2017 (1973=100)



Source: Defra

[5] Key Inputs: Intermediate Consumption, Capital Consumption, Labour, Land. Source; Total factor productivity of the UK agriculture industry, second estimate for 2017, Defra.

27. Total factor productivity in UK agriculture is not measured at a regional or country level. One way to compare the different countries and regions of the UK is to compare the value of gross output produced per hectare. Differences will reflect the geography of the areas, different farming types and differences in the proportions of livestock, arable and horticultural output produced in the different areas.

Table 1.2: Gross output[(a)] at basic prices per ha of agricultural land (£/ha), 2017

Wales	NE England	NW England	Yorks & Humbs	East Midlands	West Midlands	East of England	South East England	South West England	Scotland	NI
858	1,341	2,225	1,478	1,858	2,333	3,190	2,393	1,836	514	2,063

(a) Welsh Government calculations from official sources

28. The figures show that the value of gross output per ha of agricultural land in Wales is lower than other regions in England, and lower than Northern Ireland, but higher than Scotland.

1.3 The wider contribution of agriculture in Wales: tourism, and food and drink

1.3.1 Tourism in Wales

29. The contribution made by farmers to the appearance of the Welsh landscape is often cited as an indirect and important way in which agriculture contributes to the Welsh economy, not reflected in the GVA figures above.

30. The quality of the Welsh countryside and landscape of Wales has been identified as a key motivation for visitors – over half of UK day visitors (54%) and around two thirds (67%) of staying visitors to Wales listed the landscape as a reason for visiting in 2016.

31. The Wales Visitor Survey 2016 reveals that UK day visitors, UK staying visitors, and overseas visitors were highly satisfied with their trip to Wales. The quality of the natural environment receives the highest average score of all specific dimensions evaluated (9.0/10) for all three groups.

32. Of staying visitors to Wales that came to take part in outdoor activities, 75% listed walking as their key activity.

33. Walking and hill walking generated an estimated £562million of additional demand in the Welsh economy and £275million of GVA in 2009. This was estimated to be approximately 16% of the total tourism GVA for that year.

34. The Wales Coast Path alone makes a significant contribution to the Welsh economy of £84 million a year. It is estimated to support more that 1,000 jobs.

35. In total, tourism contributes £2,844million to GVA in Wales and supports approximately 122,900 jobs.

1.3.2 Food and drink sector

36. Once produce from Welsh farms has left the farm gate it is part of the wider UK food market. Welsh primary produce is used in non-Welsh secondary processing and likewise non-Welsh produce is used in Welsh processing.

37. However, there is an important relationship between the output from Welsh farms and the Welsh food and drinks manufacturing sector. Chapter 5 looks in more detail at the trade in major agricultural commodities (beef, sheep and dairy). Here, we summarise the contribution of the food and drink manufacturing sector to the Welsh economy.

38. The food and drink manufacturing sector in Wales employs 23,000 people, and has a turnover of £4.8bn (2018) (representing around 4% of the turnover of the non-financial business economy in Wales) and contributed £1.5bn (2016) to Welsh GVA.

39. Within food and drink manufacturing, the largest sub-sectors for retail sales in 2017 were drinks (£1.17billion), followed by meat and meat products (£1.13 billion), fruit, vegetables and plants (£892 million) and dairy and eggs (£668 million). The value of Welsh food and drink exports in Wales in 2018 was £539m. The two largest sub-sectors for exports in 2018 were meat and meat products (£142 million), and dairy and eggs (£110 million). The EU is the destination for 73% of all Welsh food and drink exports.

1.4 Agriculture and employment

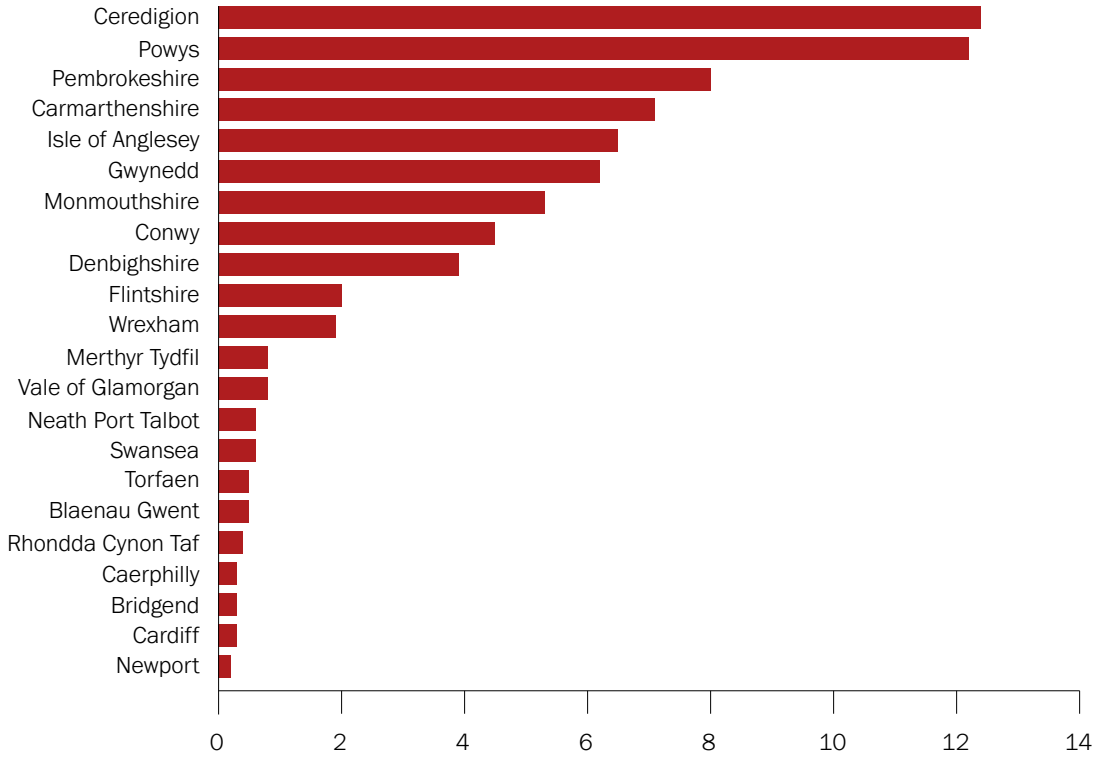
40. In September 2018, agriculture, forestry and fishing represented 3.2% of workforce jobs in Wales. This was higher than the UK average of 1.1%.

41. Human health and social work activities is the largest industry in Wales in terms of jobs, representing 14.0% of jobs in the same period. This was followed by the wholesale and retail trade industry which represented 13.9% of jobs.

42. There is regional variation within Wales in the extent of jobs in agriculture. In 2017, Ceredigion had the highest share of workplace jobs in agriculture, forestry and fishing (12.4% of jobs) followed by Powys (12.2%). The largest broad industry in both regions was public administration, defence, education and health, representing 23.1% of jobs in Powys and 32.9% of jobs in Ceredigion.

43. Urban areas such as Newport, Cardiff, Bridgend and Rhondda Cynon Taf had a share of jobs in agriculture, forestry and fishing below 1%. Further analysis of the distribution of agricultural employment in relation to settlement size across Wales is conducted in 'Industrial sector of workers by size of Built Up Area, 2011'.[6]

Figure 1.5: Workplace jobs in agriculture, forestry and fishing by Welsh local authority, 2017 (%)



Source: StatsWales/Office for National Statistics

[6] www.gov.wales/sites/default/files/statistics-and-research/2018-12/150520-industrial-sector-workers-size-built-up-area-2011-en.pdf

44. Table 1.3 shows people working on agricultural holdings[7] in Wales and shows that 75% of people working in agriculture in 2016 were farmers, directors or the partners/spouses of farmers. Of these people, 53% were not working full time on the holding which suggests that many farms in Wales have off-farm additional sources of income.

Table 1.3: People engaged in work on agricultural holdings, Wales(a)

	2011	2012	2013	2014	2015	2016
Total farmers, partners, directors and spouses:						
Full-time	19,945	19,869	17,873	19,507	19,307	18,564
Part-time(b)	25,001	25,179	22,078	23,142	22,312	21,339
Total	44,946	45,048	39,951	42,649	41,619	39,903
Farm workers:						
Regular full-time (c)	3,306	3,146	3,278	4,406	4,638	
Regular part-time (b) (c)	3,100	3,422	3,337	4,682	4,492	
Seasonal or casual workers	7,063	6,758	6,398	7,884	7,570	
Total farm workers	13,469	13,326	13,013	16,972	16,700	13,621
Total labour force:	58,415	58,374	52,964	59,621	58,319	53,524

(a) Figures are for main and minor holdings.

(b) Part-time defined as less than 39 hours per week.

(c) Includes salaried managers.

Source: Welsh Agricultural Statistics, 2016

45. The median age for a farmer in Wales in 2016 was 61 years old. This assigns one person in each farm as the key decision maker, it does not necessarily reflect the age of all the partners in the business. For example, if the farmer's son or daughter had become a partner in the farm, it would probably still be the parent whose age was used in the calculating the median age.

46. The median age varies according to the economic size of the farm. For very small farms (with under 8 European Size Units[8]) the median age is 64 years. For the largest farms (with over 100 European Size Units) the median age is 55 years.

47. The majority of principal farmers in Wales are over the age of 55 (68%), whilst 3% are under 35 years old.

1.5 Economic multipliers

48. Economic multipliers can be used to estimate the economy-wide impact of changes to a particular sector (such as the agricultural sector), or to estimate the impact of more general changes which may affect a number of different sectors simultaneously.

49. Multipliers are most reasonably considered as an estimate of short-term economic impacts. This is because over the longer term there it is likely to be adjustments within the economy which moderate any initial impacts.

[7] This dataset differs from that in Figure 1.5 as it counts the number of people working, rather than the number of jobs. People may have more than one job.

[8] Economic size unit (ESU) is a measure of output based on the geographical size of the farm and the farm activity. Farms with a larger output have a larger ESU.

50. Multipliers can be either Type I or Type II. The former take account of the direct effect[9] and the indirect effect[10], with the Type II measure also attempting to incorporate an induced effect[11].

51. One approach to the estimation of economic multipliers is through the use of input-output tables[12]. The most recent published input-output tables for Wales[13] are for 2007 – estimates of multipliers based on these tables are only available for the combined agriculture, forestry and fishing industry. These are shown in Table 1.4.

Table 1.4: Output and Employment Multipliers (Types I and II), Wales (2007)

	Output		Employment	
	Type I*	Type II**	Type I	Type II
Agriculture, forestry and fish	1.44	1.54	1.17	1.21
Minimum (all industries)	1.20	1.27	1.11	1.20
Maximum (all industries)	2.07	2.14	2.32	2.92

* The Type I multiplier represents the ratio of direct and indirect effects to direct effects.

** The Type II multiplier represents the ratio of direct, indirect and induced effects to direct effects.

Source: Welsh Economy Research Unit, Cardiff University

52. These Wales-level estimates suggest that Type I output multipliers are of a generally similar magnitude across most industries, ranging between 1.20 and 1.44[14].

53. Corresponding Type I employment multipliers range between 1.11 and 1.17[15]. However, some care is needed in interpreting such employment multipliers, since they reflect a combination of the intensity with which labour is utilised within a particular sector, and the propensity for local purchasing.

54. It is important to recognise that the magnitude of multipliers will vary across different spatial areas due to factors such as the extent of leakages. In general, higher leakage rates (and hence lower multipliers) might be expected at smaller spatial scales, though this should be informed by robust empirical evidence relevant to the specific issue under consideration.

1.6 Agriculture, rural communities and the Welsh language

55. Communities with a high proportion of Welsh speakers are often in rural areas. The 2011 census found that 19% of the total population of Wales were able to speak Welsh. In Gwynedd, this rises to 65%.

9 The change in output in the industry subject to the initial change in final demand.

10 The effect on the output of industries supplying the industry originally subject to a change in final demand.

11 The effect arising from changes to consumer expenditure due to effects on household income following changes in employment as a consequence of the direct and indirect effects.

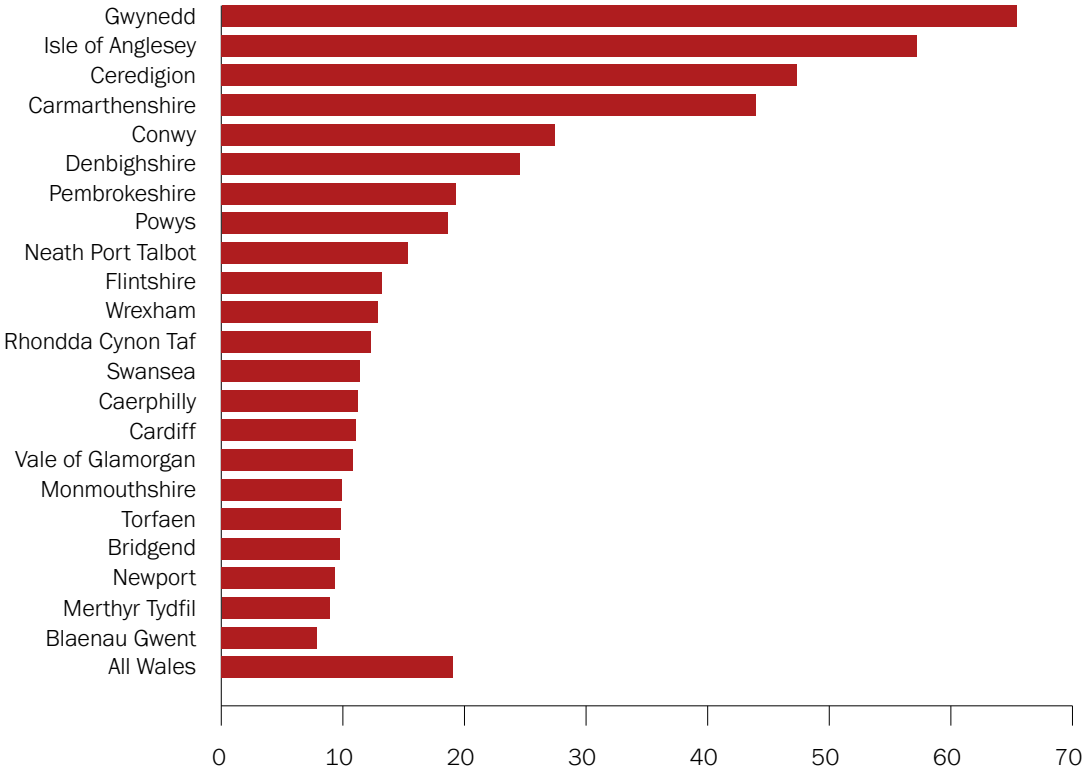
12 The input-output multiplier approach assumes constant returns to scale (fixed technical coefficients), so that a change in output leads to a fixed proportional change in inputs, and also assumes excess capacity available to readily accommodate increases in material and labour input requirements at existing prices and wages.

13 As a single input-output table for Wales, inter-regional effects with the rest of the UK are not fully reflected.

14 With the exception of the electricity, gas and water industry.

15 Excluding the higher estimates suggested for both food, drink and tobacco, and oil processing, chemicals and pharmaceuticals.

Figure 1.6: Welsh language skills by local authority in Wales, 2011 (% able to speak Welsh)



Source: 2011 Census of Population

56. A comparison of figures 1.5 and 1.6 shows that 4 of the top 6 counties in terms of the proportion of people speaking Welsh are also 4 of the top 6 counties in terms of the proportion of the population employed in agriculture, forestry and fishing (these being Gwynedd, Anglesey, Ceredigion and Carmarthenshire)[16].

57. Table 1.5 shows the share of workers by employment sector that are Welsh speakers compared to the number of speakers in that sector. 227,800 workers in Wales in 2011 could speak Welsh. This was 17% of all workers.

58. Agriculture, forestry and fishing has an estimated 10,600 Welsh speakers. This represents 43% of the total working population for the sector and is the highest share across sectors.

59. Education has an estimated 37,000 Welsh speakers and is the sector with the highest number of speakers. This represents 27% of workers in education and is the sector with the second largest percentage share after agriculture, forestry and fishing.

[16] Although in all four counties the proportion of Welsh speakers is greater than the proportion employed in agriculture, forestry and fishing.

Table 1.5: Workers who can speak Welsh by sector, Wales, 2011

	Workers (000)		Share
	Speaks Welsh	All workers	Speaks Welsh
Education	37.0	138.5	27%
Health	32.0	198.2	16%
Retail	30.6	213.9	14%
Public admin	20.0	108.6	18%
Construction	18.3	111.9	16%
Manufacturing	14.4	144.6	10%
Accommodation and food	13.6	85.5	16%
Agriculture, forestry & fishing	10.6	25.0	43%
Professional	9.0	59.0	15%
Transport	7.1	53.6	13%
Admin & Support	6.5	54.7	12%
Arts & Recreation	6.2	30.7	20%
Info & communications	5.0	31.2	16%
Finance	5.0	41.8	12%
Power & Water	4.6	26.6	17%
Real estate	2.6	17.2	15%
Others	5.4	31.8	17%
All sectors	**227.8**	**1,372.7**	**17%**

Sectors ranked by number of Welsh speaking workers in the sector.

Source: Census of Population, 2011

Chapter 2: Welsh Land

Introduction

60. This chapter looks at agricultural land in Wales, and the relationship between agriculture and the natural environment, including the contribution of agriculture to the provision of ecosystem services.

2.1 Agricultural land in Wales

61. Of the 2.1 million hectares of land in Wales, the land on farms and commons (covering 1.86m ha) represents 88%. Farmers are therefore the largest group of land managers we have. The soil quality, climate and geography of Wales mean that most of the agricultural land (81%) is under grass, with arable accounting for 13%:

62. The regional breakdown of this shows that the three counties that make up south west Wales (Ceredigion, Pembrokeshire and Carmarthenshire) collectively have around one third (just under 360,000 ha)) of the permanent grass in Wales. North West Wales accounts for just under one third of Wales' rough grazing that is associated with sole rights, whilst Powys has just under 40% of Wales' common land rough grazing. South West Wales accounts for 35% (86,000ha) of Wales' arable land.

Table 2.1: Agricultural Land in Wales[a]

	Arable[b]	Permanent grass	Rough grazing (sole rights)	Rough grazing (commons)	Woodland on agriculture holdings	Other	Total
Hectares	247,059	1,065,602	260,196	180,305	89,171	15,044	1,857,377
%	13.3	57.4	14.0	9.7	4.8	0.8	100

(a) This table includes common land – Table 3.3 in the next chapter excludes common land.

(b) Arable includes grassland sown for less than 5 years.

Source: Welsh Agricultural Statistics 2016

Table 2.2: Regional Distribution of Agricultural Land in Wales (thousand hectares)[a]

	Arable	Permanent grass	Rough grazing (sole rights)	Rough grazing (commons)	All other land on agricultural holdings	Total
North West Wales	28.3	150.0	82.6	21.2	15.7	297.7
North East Wales	42.5	147.6	39.5	21.8	10.8	262.1
Powys	50.4	272.7	69.0	70.4	25.3	487.8
Ceredigion	20.4	102.9	26.2	12.0	9.5	173.4
Pembrokeshire	42.3	96.9	8.5	5.8	17.5	162.9
Carmarthenshire	23.9	159.6	11.0	15.1	13.7	227.0
South Wales	39.3	136.0	23.4	34.0	104.2	246.5
TOTAL Wales	**247.1**	**1,065.6**	**260.2**	**180.3**	**154.2**	**1,857.4**

(a) See Figure 3.3 in Chapter 3 which shows the distribution of main agricultural activity in the different regions of Wales.

Source: Welsh Agricultural Statistics 2016

63. In terms of its designated landscapes, Wales has three National Parks[17], covering over 413,000ha, and five Areas of Outstanding Natural Beauty (AONB)[18] covering over 100,000 ha. In total, both designations cover around 25% of the land area of Wales.

64. In terms of its statutory nature conservation designations, Wales has 85 terrestrial Special Areas of Conservation (SACs) (for the conservation of habitat types and species (other than birds) of European importance) in Wales, covering almost 122,000 ha (5.8%) of the land area, and 9 terrestrial Special Protection Areas (SPAs) (covering just over 77,000ha) for the conservation of internationally important populations of birds[19]. In addition, Wales has 1,062 Sites of Special Scientific Interest (SSSI), covering just over 262,000 ha (12.6%) of the land area of Wales[20].

2.2 Agriculture as a provider of ecosystem services

65. As the largest group of land managers in Wales, farmers are the principle suppliers, and important users, of ecosystem services. Ecosystem services are those provided to society by living components of the planet. These can be services such as flood prevention, pollution reduction, pollination and water storage.

66. Table 2.3 shows the estimated annual value of a range of farmland ecosystem services at UK level since 2007. The value of agriculture goes beyond that of products sold on the traditional market. Farmers in Wales make a valuable contribution to the environment through provision of these ecosystem services.

17 Snowdonia, Brecon Beacons and Pembrokeshire Coast.

18 Gower Peninsula, Anglesey, Clwydian Range, Llyn Peninsula, and Wye Valley.

19 In addition, there are 10 marine SACs/marine candidate SACs, and 12 marine SPAs.

20 Some land is subject to multiple designations (for example, all terrestrial Natura 2000 sites have further statutory protection as SSSI).

Table 2.3: UK farmland annual monetary value by service, 2007 to 2015

£ million

Type of Service	2007	2008	2009	2010	2011	2012	2013	2014	2015
Provisioning Services:									
Crops and grazed biomass	235.0	1,555.1	0.0	1,300.3	1,079.2	1,160.5	1,763.1	1,330.1	
Water abstraction	5.3	3.4	2.2	2.9	5.1	6.4	6.7	5.7	3.8
Regulating Services:									
Pollution removed[(a)] (thousand tonnes)	342.2	313.8	285.4	256.9	228.5	215.4	202.3	189.1	176.0
Cultural Services:									
Time spent at habitat			405.2	327.3	275.6	232.4	211.8	312.3	197.8
Eduction visits	0.7	0.9	1	1.2	1.5	1.5	2.1	2.3	1.8

(a) The air pollution valuation covers fine particulate matter, sulphur dioxide, nitrogen dioxide, and ozone.

Source: Office for National Statistics

67. Pollination is also a key ecosystem service, the value of which is not included in the above table. 85% of the UK's apple and runner bean crops, 65% of the UK's pear, plum and cucumber crops, and 45% of the UK's strawberry and raspberry crops rely on pollinators. In total, it is estimated that pollination services are worth at least £603 million (2010 figures) to the UK economy a year. Table 3.1 and 3.3 in chapter 3 show that there are only 188 horticultural units in Wales, covering just over 4,300 ha, so the value of pollination services is more important for England than Wales.

68. In addition, the table does not include the value of carbon sequestration. The monetary value to society of the carbon sequestration services provided by land is not available. However, in terms contribution to carbon sequestration in physical units, the Land Use, Land Use Change and Forestry (LULUCF) sector provided a net reduction in Welsh emissions in 2016 of 0.77 $MtCO_2e$. The emissions reduction is largely due to the action of forest land removing carbon dioxide from the atmosphere.

69. The LULUCF sector comprises both sinks (activities that remove carbon dioxide from the atmosphere) and sources of emissions. In 2016, the largest sinks are existing forest land (67%), cropland conversion to grassland (12%) and existing grassland (11%). The largest emission sources in the sector arise from grassland conversion to cropland (30%), existing cropland (23%), grassland conversion to settlements (21%) and existing settlements (16%). In 2016, the first year of the Welsh Government's carbon budget period, Welsh LULUCF sector emissions decreased by 29% compared to 2015, driven largely by a change in the forest land sink.

2.3 The natural environment

70. We summarise below the findings of the statutory State of Natural Resources Report (SoNaRR) (NRW, 2016). We summarise first the condition of the flora and fauna, air, freshwater and soils in Wales, these being key environmental components that contribute to ecosystem resilience. We then describe the condition for three key terrestrial ecosystems: firstly, mountain, moor and heath; secondly, semi-natural grasslands; and thirdly, enclosed farmland.

71. Natural Resources Wales' (NRW) overall conclusion however is that *all ecosystems have problems with one or more attributes of resilience. This means that their capacity to provide ecosystem services and benefits may be at risk. No ecosystem, on the basis of our assessment, can be said to have all the features needed for resilience*.

72. The descriptions reported here reflect changes in land use often going back many decades. Changes in the overall resilience of these key ecosystems have been heavily influenced by farming, which in turn has been driven by the system of support under various agricultural policy regimes, introduced in the UK post-war.

2.3.1 Flora and Fauna

73. The extent, condition and trends of terrestrial species in Wales are influenced primarily by habitat management and by climate change. Changes in habitat quantity and quality are directly related to changes in the intensity of management regimes. Fragmentation and eutrophication also create particular problems for many species.

74. From monitoring data collected for species features on Natura 2000 sites, the overall condition of SAC and SPA species features on these sites in Wales, as reported in 2013, was mostly unfavourable (55%), with the exception of birds and mammals of which 86% and 68% were in favourable condition respectively.

75. The list of species and habitats of principal importance in Wales[21] includes 557 species. Between 2002 and 2008, fewer than half of these species were considered to be stable or increasing. SoNaRR reports the findings of the State of Nature Wales 2016 report, which includes an assessment of the status of some of the interim Section 7 species in comparison to 2008 – the results are summarised in Table 2.4.

Table 2.4: Status of interim Section 7 species in Wales

	Number of species listed as priorities	Number assessed	% declining	% improving outlook	% showing little change in status
Invertebrate species	104	67	21%	25%	54%
Vertebrate species	83	78	37%	21%	42%
Fungi and lichens	87	55	29%	27%	44%
Bryophytes	52	49	47%	24%	29%

Source: summarised from SoNaRR, based on the State of Nature Wales 2016

[21] The interim list produced under Section 7 of the Environment (Wales) Act 2016.

76. The percentage of priority species assessed as having declined in the period 2002-08 is highest for briophytes, at just under half. Of the remaining priority species considered, a third of fungi and lichens, almost 40% of vertebrates and one in five invertebrate species are also assessed as having declined in the same period.

2.3.2 Air quality

77. Peak ground level ozone concentrations have declined over the past 30 years. Over the same period, background concentrations have been steadily increasing across northern Europe by about 0.2ppb annually, leading to damage to some plant species

78. Ammonia remains an issue, both as a local air pollutant and as a contributor to the formation of secondary particulate matter. Concentrations of secondary particulate matter have risen in Wales in recent years, largely due to changes in agricultural practice.

79. 90% of semi-natural nitrogen sensitive Welsh habitats are subject to nitrogen deposition in excess of critical load limits.

2.3.3 Freshwater

80. Wales has approximately 24,000 km of rivers and streams. Around 15% of the land area of Wales drains into 558 lakes, including over 150 large scale reservoirs which cover 8,143 ha. Water quality in rivers has generally improved over the last 25 years, mainly as a result of improvements to sewage discharges. However, in 2015, 63% of all freshwater water bodies defined by the Water Framework Directive were not achieving good or better overall status.

81. Water quality and flow in freshwater habitats is intimately connected with the condition of the surrounding terrestrial habitats.

82. The overall status (2015) for river lake and groundwater bodies in Wales is shown in Table 2.5.

Table 2.5: Status for river and lake groundwater bodies in Wales, 2015

	High	Good	Moderate	Poor	Bad
Rivers[(a)]	0	285	374	55	3
Lakes	1	17	96	9	1
Groundwater	NA	22	NA	16	NA

(a) Not including canals & surface water transfers.

Source: NRW (2016) SoNaRR

83. The most common failing elements are:

- in rivers – fish, phosphorus and metals
- in lakes – invertebrates and phosphorus
- in groundwaters – metals.

84. Pollution from rural areas is the second most important reason (after physical modifications) why a water body in Wales has failed to achieve good status, affecting over 150 water bodies in Wales. Other important reasons include pollution from sewage and waste water, pollution from towns, cities and transport, and pollution from mines.

85. Changes to hydraulic conditions are identified as having an impact or likely to have an impact on 45 Natura 2000 protected sites. Only one out of six freshwater habitat types are in Favourable Conservation Status. Much of the habitat degradation seen within Natura 2000 rivers and their floodplains is linked to historical and current changes. Many wetland sites suffer from barriers which can affect their natural hydrology and altered water flows which, as well as impacting on hydrology, can also lead to nutrient-rich water being diverted on to sites.

86. Intensive land drainage, agricultural changes and peat cutting can cause water to drain away from peat bogs and lead to them drying out. This reduces the ability of wetlands to control flood water and function as a carbon store. The upland and lowland lakes of Wales designated under the Natura 2000 network are impacted by drainage, water abstraction and changes in water levels which affect their habitat condition.

87. In many Welsh rivers flows are particularly vulnerable to climate change because they tend to rise and fall quickly in response to rainfall. The impacts of lower river flows will extend beyond water resources. For example, reduced flows and associated changes to water quality and temperature could impact on fish migration and spawning, reducing the quality of inland fisheries in Wales. Increased flows during winter may also increase pressure upon sewerage and drainage systems and diffuse pollution.

2.3.4 Soils

88. Welsh soils contain 410 million tonnes of carbon. Topsoil carbon concentrations are generally stable and there is ongoing recovery from soil acidification, it remains above the optimum levels in many (44%) agricultural fields.

89. The soils of best quality and most productive agricultural land are a scarce and finite resource in Wales; accounting for less than 7% of land area[22].

90. Soil quality has deteriorated across all habitats apart from woodlands where there has been some improvement. The severity and spatial extent of soil erosion has not been directly quantified in Wales. Around 10-15% of grassland fields in England and Wales are thought to be affected by severe soil compaction and 50-60% are in moderate condition. No data exists on compaction in grassland and arable land across Wales specifically.

91. Only 30% of the Welsh peat soil area is considered to be in 'good condition'. It is estimated that 74% of acid sensitive habitat soils receive acidic deposition in excess of their capacity to neutralize air pollution.

92. Soil invertebrate numbers indicate no overall trend.

2.3.5 Terrestrial ecosystems: Mountain, moor and heath

93. Mountain, moorland and heath habitats extend over 261,824 ha in Wales (13% of Wales). 70,130 ha (27% of the total) of mountain, moorland and heath habitat occur as SSSI features across Wales on 118 SSSI. Extensive areas are included within the Glastir scheme with grazing prescriptions helping to ensure appropriate grazing.

94. The condition of the most extensive semi-natural habitats of mountain, moorland and heath within SSSIs ranges between 63 and 73% unfavourable. The overall assessment of the conservation status of the 15 habitats associated with mountain, moorland and heath, and listed in Annex 1 of the EU Habitats Directive[23], is either bad or inadequate. Habitat fragmentation has resulted in poor connectivity for lowland examples of mountain, moorland and heath habitats.

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[22] 'The Agricultural Land Classification system gives an indication of how land quality varies across Wales. See the Predictive Agricultural Land Classification Map for more information'.

[23] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

95. Some 60% of the Welsh deep peat resource occurs within the mountain, moorland and heath habitat suite with most of it represented by blanket bog. Some 59% of the blanket bog resource displays signs of modification resulting from drainage and other land-use impacts. Significant areas of deep peat occur elsewhere in the uplands, chiefly in conifer plantations, acid grassland, heathland and improved grassland. Exposed peat resulting from erosion extends over less than 100 ha but affects over 180 sites. Approximately 2,000 km of drainage ditches occur on upland peatlands with at least 742 km blocked already contributing to improvements in biodiversity, carbon storage and sequestration and flood risk management.

2.3.6 Terrestrial ecosystems: Semi natural grasslands

96. Grassland makes up nearly two thirds of the land cover of Wales. The majority (more than 1,000,000 ha) is agriculturally improved and only about 192,000 ha is semi-natural grassland (9% of the land cover of Wales). There are some 78,000 ha of grassland priority habitat, more than 90% of which is in the lowlands.

97. The extent of lowland semi-natural grasslands has decreased dramatically since the 1930s. Dry lowland grassland habitat has been particularly badly affected, with an estimated 97% decline in that period, so that, for example, only 1,600 ha of unimproved neutral grassland remain; an estimated 91% was lost in Wales between the 1930s and the 1990s. Semi-natural lowland grasslands have become highly fragmented in most areas, greatly restricting movement of less mobile species between habitat patches. The rate of loss of semi-natural grassland is thought to have slowed, although losses of high quality lowland semi-natural grassland have continued into the 21st Century.

98. 92% of grassland Special Area of Conservation (SAC) features in Wales are considered to be in unfavourable condition. A rapid review of grassland features on SSSIs in Wales in 2003 estimated that only 43% were in favourable condition.

2.3.7 Terrestrial ecosystems: Enclosed farmland

99. Enclosed Farmland covers around 1 million ha or c.54% of agricultural land, and plays a major role in food production with resulting impacts on soil, water, biodiversity and GHG emissions. The area of arable and horticultural crops (87,000 ha) has increased by 35% over the last ten years but still only represents some 8.7% of enclosed farmland.

100. Arable-associated flora is the most threatened group of plants in the UK with 54 species considered rare or threatened. Arable weed/field margin habitats were widespread and abundant until 1950s when herbicides became widely used. A gradual decline in such communities and their associated fauna has occurred since then as cultivation became more intensive. There has been a significant decrease in arable species richness in Wales between 1998 and 2007. Species loss slowed in recent years due to an increase in organic farming and support from agri-environment schemes.

101. The total length of hedgerows in Wales has been estimated at 106,000 km but 78% of this is in unfavourable condition. The number of hedgerow trees fell by 3.9% between 1998 and 2007. Some 5,800 km of hedgerow has been restored or is planned for restoration under agri-environment schemes.

102. The area covered by traditional orchards was estimated to have declined by 94% between 1958 and 1992. Traditional orchards have become increasingly rare due to neglect, agricultural intensification and development pressures; all of which threaten their characteristic biodiversity.

2.4 Welsh Government key environmental commitments

2.4.1 Carbon

103. The Welsh Government is committed to cutting emissions and supporting the growth of a low carbon economy in a way that maximises the wider benefits for Wales, and ensures a fairer and healthier society. Targets, carbon budget allocation and 2030 pathways for the land use, land use change and forestry sector, and the agricultural sector, are shown in Table 2.6.

Table 2.6: Targets, carbon budget allocation and 2030 pathways for the land use, land use change and forestry sector, and the agricultural sector

Sector	2020 emissions target	Sector allocation for Carbon Budget 1 (CB1)	Sector pathway to 2030
Land use, land use change and forestry sector (LULUCF)	The LULUCF sector will continue to provide a sink from baseline levels in the year 2020.	We intend that this sector should remain a sink.	We will significantly increase the LULUCF sink in Wales by the year 2030
Agricultural sector	Emissions in 2020 will be 6% lower than in 2016. This will mean that agriculture sector emissions are 17% lower than the baseline in the year 2020.	The total budget for the agriculture sector for CB1 is estimated to be 27.4 $MtCO_2e$. The agriculture sector contributes 12.4% of the total Welsh budget for CB1.	Agriculture sector emissions will reduce by 28% from baseline (1990) levels by the year 2030.

Source: Welsh Government

2.4.2 Air quality

104. The Welsh Government, alongside the UK Government and other Devolved Administrations, has recently consulted on its plans to help achieve the UK's future emission reduction commitments for 5 important air pollutants, including ammonia, within the UK National Air Pollution Control Programme. These commitments are shown in Table 2.7.

Table 2.7. National emission reduction commitments

	SO_2	NO_x	NMVOC	NH_3	$PM_{2.5}$
	Sulphur dioxide	Nitrogen oxides	Non-methane volatile organic compounds	Ammonia	Particulate matter
The national emission reduction commitments compared with 2005 base year (in %):					
2020-29	59%	55%	32%	8%	30%
From 2030	88%	73%	39%	16%	46%

Source: Defra, Scottish Government, Department of Agriculture, Environment and Rural Affairs Northern Ireland and Welsh Government

105. The UK National Air Pollution Control Programme is required to be published and submitted to the European Commission by 1 April 2019.

2.4.3 Water

106. The Welsh Government is committed to improving the quality of our water in rivers, bathing waters, and other water bodies across Wales.

107. The EU Water Framework Directive is focussed on establishing an integrated approach to the protection and sustainable use of the water environment. This requires a holistic approach to managing waters, looking at water within the wider ecosystem and taking into account the movement of water through the hydrological cycle. Each water body must achieve 100% good ecological status by 2027. Other Directives (Bathing Waters, Urban Waste Water Treatment, and Nitrates) will all contribute to improving water quality.

2.4.4 Soil

108. Peatlands in good ecological condition provides the best conditions for carbon storage and sequestration. The Welsh Government is committed to the sustainable management of peatlands supporting semi-natural habitat in Wales. Restoration of peatland will deliver across a range of areas including climate change mitigation and adaptation, water quality and flood management and the improvement of the status and nature of biodiversity.

2.4.5 Biodiversity

109. Along with six other goals for the sustainable Wales we want, the Wellbeing of Future Generations Act 2015 puts in place the 'Resilient Wales' goal: *'A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).'*

110. The Welsh Government's Nature Recovery Action Plan states our ambition to reverse the decline in biodiversity, for its intrinsic value, and to ensure lasting benefits to society. It sets out how we will deliver the commitments of the EU Biodiversity Strategy and the UN Convention on Biological Diversity's (CBD) Strategic Plan for Biodiversity and the associated Aichi Biodiversity Targets[24], to halt the decline in our biodiversity by 2020 and then reverse that decline.

[24] The Convention of Biological Diversity (CBD) and the associated Aichi Biodiversity Targets, for the 2011-2020 period, provides an overarching framework on biodiversity for countries part of the United Nations.

Chapter 3: Farm businesses in Wales

Introduction

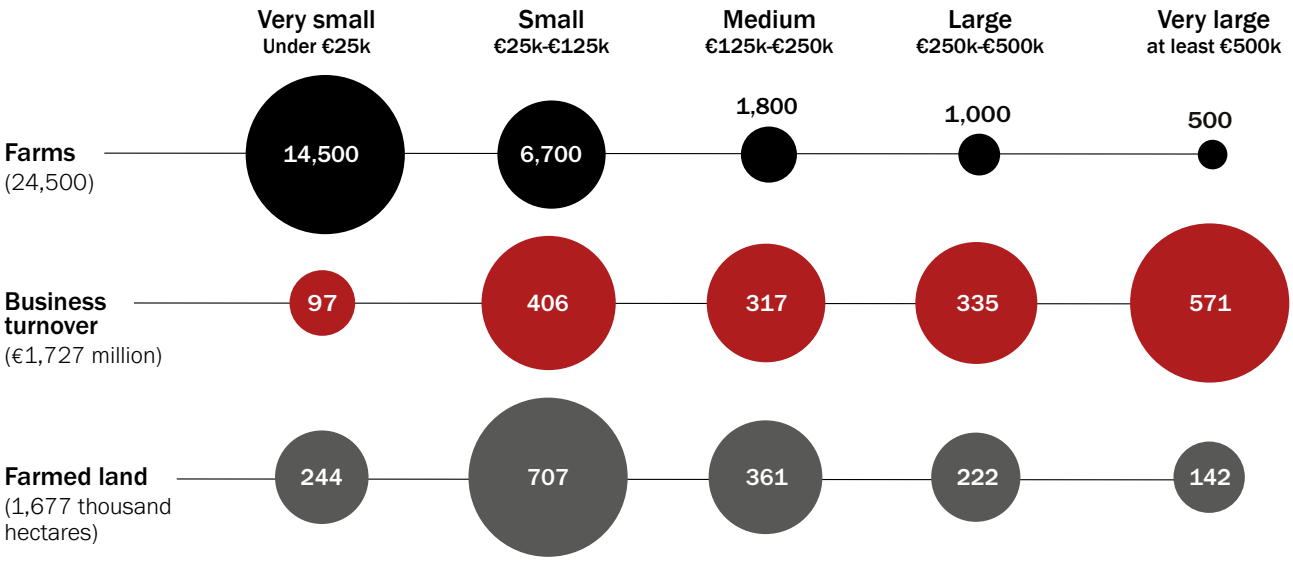
111. This chapter examines farm businesses in Wales. It describes farming activity in Wales, and explores farm business income.

112. Figure 3.1 shows the relationship between the number of farms, business turnover and farmers land in Wales[25].

113. The data shows that very small farms (59% of the total) account for 6% of total turnover, from 15% of the farmed land, whilst at the other end of the scale, 33% of total turnover is accounted for by the 2% of farms that are very large but which farm only 8% of the land. Small farms manage 42% of the farmed land, generating 24% of total turnover.

Figure 3.1: Number, of farms, business turnover and farmed land, by economic size of farm (Wales, 2016)

The size groups used in this chart show farm businesses with an estimated turnover (standard output)



Source: Welsh Agricultural Survey, 2016

3.1 Farm types in Wales

114. Farms large enough to need at least one full time worker are classified according to their dominant activity.

115. Of the active farms in Wales, cattle and sheep holdings are the most frequent and represented 31% of all active holdings in 2016.

116. Specialist pigs and poultry, cereals, horticulture and general cropping together represent 3% of all active holdings. The relatively low presence of these types of farm holdings again reflects the particular climate and terrain of Wales.

[25] The measurement of farm size used in Figure 3.1 differs from that used in Table 3.1 and therefore the number of very small farms in each varies slightly.

Table 3.1: Number of holdings by type of farming in Wales, 2013-2016

	2013	2014	2015	2016
Type of farming:				
Cereals	234	253	270	260
General cropping	82	82	93	92
Horticulture	190	188	186	186
Specialist pigs or poultry	131	123	117	118
Dairy	1,722	1,680	1,664	1,628
Cattle and sheep	7,721	7,715	7,712	7,676
Mixed[(a)]	405	429	419	398
Other types[(b)]	224	218	218	174
Very small[(c)]	14,647	14,034	14,087	13,994
Dormant holdings[(d)]	16,941	10,530	11,900	12,756
Active holdings	25,356	24,722	24,766	24,526
All types[(e)]	42,297	35,252	36,666	37,282

(a) Combinations of cropping with various types of livestock.

(b) Mainly grass and forage or specialist horses.

(c) Holdings with small amounts of agricultural activity are grouped together irrespective of farm type.

(d) In 2014 the register of holdings was reviewed and this resulted in a number of obsolete holdings been identified and removed.

(e) Figures include both main and minor holdings.

Source: Welsh Agricultural Statistics, 2016

117. The total number of active farm holdings in Wales has reduced by 830 since 2013. There have been reductions in the numbers of all active farm types, with the exception of cereal and general cropping farms.

3.2 Farm land in Wales

3.2.1 Land profile on farms

118. Less Favoured Area (LFA) Land is that designated by the European Union as being of lower potential than the national average. In Wales this reflects the mountainous terrain and high rainfall which can limit options for farming.

119. Around 80% of agricultural land in Wales is categorised as LFA. Across the UK, Wales has the second highest proportion of LFA land. Scotland has 84% LFA land, whilst England has the lowest at 16%. Figure 3.2 shows the distribution of LFA land across the UK.

120. Farms are classified as LFA farms if at least 50% of their total area is designated as being in the LFA. LFA land is further split into that in the Severely Disadvantaged Area (SDA) and the Disadvantaged Area (DA).

Figure 3.2: United Kingdom Less Favoured Areas

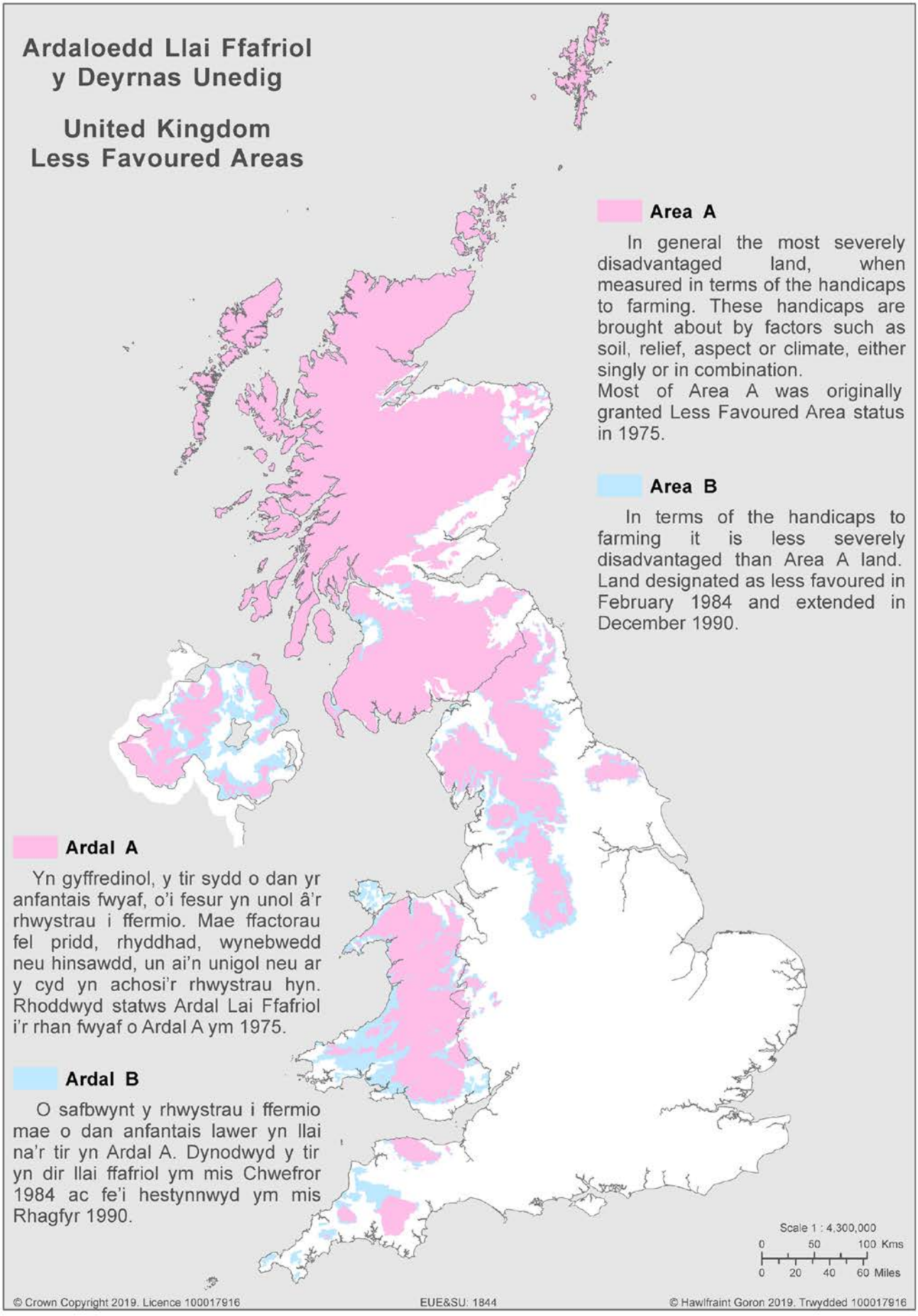


Table 3.2: Agricultural land in Wales, 2016

	LFA Disadvantaged	Severely Disadvantaged	Non-LFA	Total
Crops and Grass:				
Arable land	67,536	85,912	93,610	247,059
Permanent grass	308,003	553,853	203,746	1,065,602
Total	375,539	639,765	297,356	1,312,661
Rough grazing:				
Sole rights	32,160	211,289	16,747	260,196
Woodland on agricultural holdings	22,920	53,114	13,137	89,171
All other land on agricultural holdings	4,528	7,135	3,381	15,044
Total woodland and other land holdings	27,448	60,249	16,518	104,215
Total area of agricultural land	435,147	911,303	330,622	1,677,072

Note: Excludes common land as breakdown between LFA and non-LFA land not known.

Source: Welsh Agricultural Statistics, 2016

121. Table 3.2 shows the distribution and type of agricultural land across the LFA in Wales. 64% of the LFA land in Wales was under permanent grass in 2016 whilst 11% was being used for arable.

122. Table 3.3 shows that Cattle and sheep farms in the LFA occupy the largest share of agricultural land in Wales (46% of land). Horticulture occupies the smallest share of agricultural land (0.26%).

Table 3.3: Number of hectares of total area and average farm size by farm type in Wales, 2016

	Number of hectares of total area	Average Farm size (hectares)
Type of farming:		
Cereals	39,579	152
General cropping	11,372	124
Horticulture	4,353	23
Specialist pigs or poultry	4,501	38
Dairy	185,574	114
Cattle and sheep (LFA)	764,654	117
Cattle and sheep (Lowland)	81,562	70
Mixed	47,499	119
Other types	11,386	65
Part-time/very small	210,441	15
Dormant holdings	316,153	25
Active Holdings	1,360,919	55
All types	1,677,072	45

Note: 'Other' includes specialist horse, goats, grass and unclassifiable. Excludes common land.

Source: Welsh Agricultural Statistics, 2016

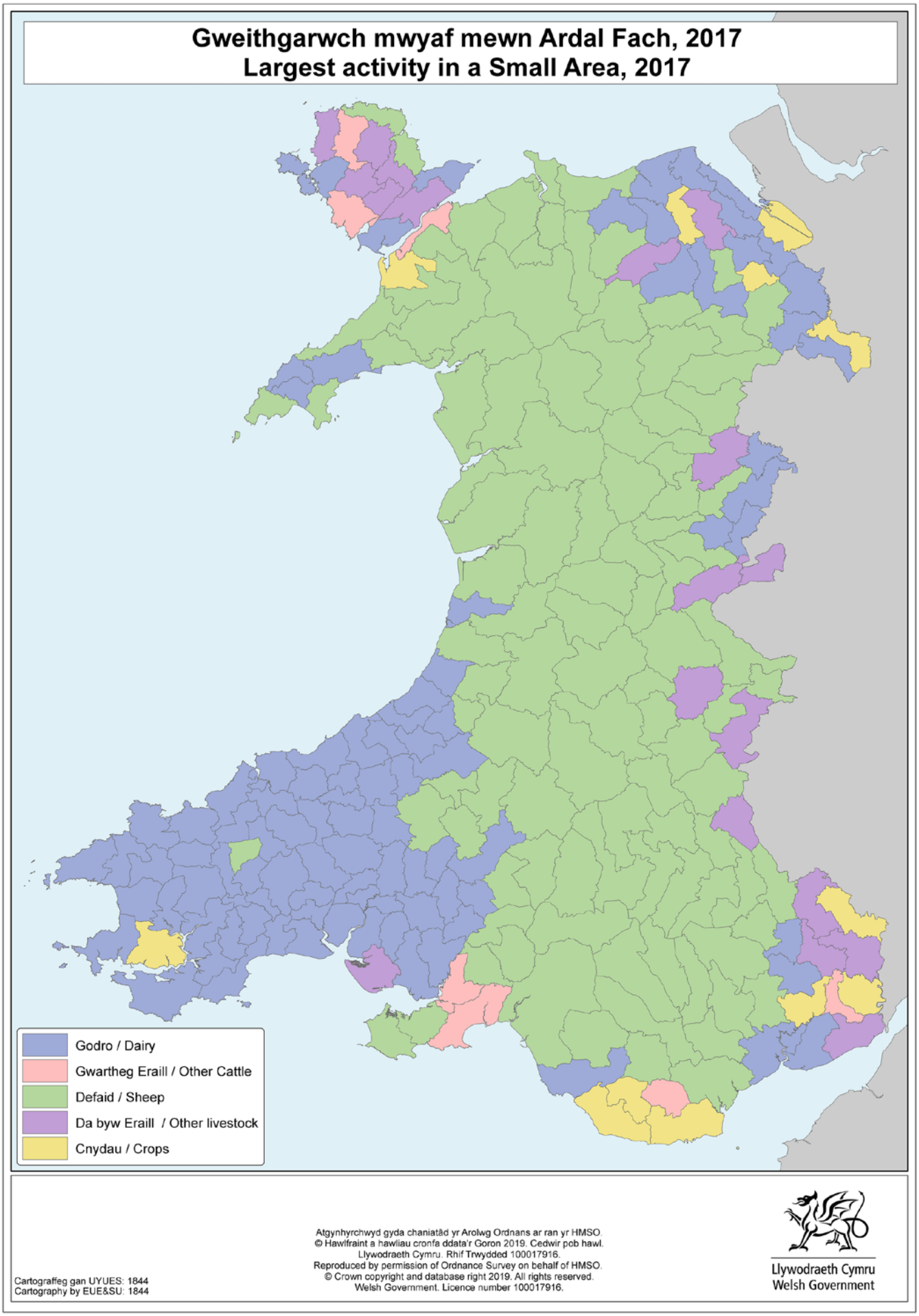
123. Figure 3.3 shows the largest agricultural activity[26] in each of 235 Small Areas[27] in Wales in 2017. Sheep farming has the largest share of agricultural activity in the highest number of Small Areas (104), whilst other cattle[28] has the largest share in the fewest (9).

[26] This shows the activity with the largest share, not the majority share.

[27] A Small Area contains proximately 100-200 farms. These are agriculture specific Small Areas.

[28] Cattle other than calved dairy females.

Figure 3.3: Largest Activity in a Small Area, Wales, 2017



3.2.2 Farm size

124. Average farm size in Wales is generally small (45 hectares) in comparison to areas of the United Kingdom. Scotland has the highest average farm size (113ha) whilst Northern Ireland has the smallest (41ha). 54% of holdings in Wales are under 20ha in size. If we exclude these holdings, the average area on farm holdings in Wales rises to 99ha (compared to 292ha in Scotland and 62ha in Northern Ireland).

125. Across all farm types, cereal farms tend to be the largest with an average farm size of 152ha.

126. Of the dominant farm types in Wales (livestock), dairy farms have the largest average farm size whilst cattle and sheep farms in the lowlands are on average the smallest.

3.2.3 Land under tenancy

127. Tenant farmers and land rental agreements are an important part of agriculture in Wales.

128. 9% of holdings that applied for Basic Payment Scheme (BPS) and/or Glastir in 2018 were farms that applied with wholly tenanted land, whilst 39% of holdings applied with both owned and rented land. 52% of holdings owned all of the land that they applied with.

129. Of the total amount of land in Wales for which BPS and/or Glastir claims were made, over a quarter was for land that was rented.

130. The Farm Business Survey (FBS) estimates that 35% of rental agreements in 2017-18 were for less than 1 year.

Table 3.4: Land ownership of BPS and Glastir applicants 2018[(a)]

Total RPW Area (ha)	**1,366,406**
Percentage area rented	27%
Percentage area owned	73%
Percentage of holdings wholly tenanted	9%
Percentage of holdings mixed tenure	39%
Percentage of holdings owning all farmed land	52%

(a) All RPW data provided here excludes cross border farms (farms in England paid by Wales and in Wales paid by England.

Source: Rural Payment Wales Single Application Form data for 2018.

131. Farmers renting land may be put at a disadvantage by rising land prices if this also increases rent. This is in contrast to farmers that own their land who will benefit from any increases in land value (through increasing the asset value of their land and ability to borrow against that asset value, or possibly increasing land rental values if that land is rented out).

132. Renting land for pasture was on average more expensive in Wales in the first half of 2018 than it was in England and Wales as whole, as shown in Table 3.5.

133. Full agricultural tenancies[29] (Agricultural Holding Act 86 Tenancies, AHA 86) were less expensive than Farm Business Tenancies[30] (Agricultural Tenancies Act 95, ATA 95) in the first half of 2018. This is a UK-wide pattern and reflects the difference in tenancy length between the two types of agreement. The (often) shorter length of Farm Business Tenancies (under ATA 95) means that rents are revised more often and so tend to more closely reflect increases in land values.

[29] AHA 86 tenancies often have lifetime security of tenure and associated succession rights. These tenancies were agreed before 1 September 1995.

[30] ATA 95 tenancies are those agreed after 1 September 1995. Landlords and tenants can end these contracts by issuing a notice to quit.

Table 3.5: Royal Institution of Chartered Surveyors Rural Land Market Survey H1 2018: Rent Prices in the first half of 2018

	Arable (£/acre) AHA 86	Rents ATA 95	Pasture (£/acre) AHA 86	Rents ATA 95
Wales	65	140	65	100
England and Wales	76	144	57	93

Source: RICS Rural Land Market Survey.

134. Table 3.6 shows that tenant farm businesses have lower net worth than farms that are wholly owned or of mixed tenure. This is as expected because tenant farmers do not own the land or buildings used to run their business.

135. Fixed assets (such as land, buildings, BPS entitlements, and machinery) are those that are not likely to be quickly converted to cash, but a farm business could borrow against their value.

136. Owner occupied farm businesses have higher fixed and current assets than tenanted farms. Higher fixed assets will give a business more borrowing power.

137. Farms that have current liabilities (overdrafts, short-term debts) larger than current assets (cash, savings, stock) may experience short term financial challenges because fixed assets cannot be quickly accessed in order to service the debt. More detail about farm net worth is provided in section 3.8.

Table 3.6: Average assets, liabilities and net worth for Farm Business Survey farms in Wales by tenure, 2017-18

Average per farm (£)

Tenure	Assets – land and buildings	Assets – other fixed	Assets – current	Liabilities – fixed	Liabilities – current	Net worth
Tenanted	18,500	161,100	47,800	-11,900	-23,600	191,900
Mainly tenanted	526,700	215,300	99,400	-107,200	-50,000	684,100
Mainly owner occupied	1,027,100	216,600	93,800	-118,500	-34,100	1,184,900
Owner occupied	1,116,800	182,000	79,800	-78,900	-28,500	1,271,200
All tenures	**937,400**	**194,500**	**83,900**	**-88,800**	**-32,400**	**1,094,600**

Source: Reweighted population estimates from the Farm Business Survey

3.2.4 Common land in Wales

138. Common land is that for which non-owning parties have certain rights. Rights of commons can include rights such as grazing livestock or taking wood.

139. Rights of common are often attached to ownership of nearby land or buildings. 98% of the common land area in Wales has registered rights of commons associated with it.

140. Commons are managed by variety of management structures and may have multiple owners. Landowners generally are unable to conduct any activity on their common land that would interfere with the rights of common.

141. An estimated 9.7% of agricultural land in Wales is common land. This is equivalent to approximately 180,000ha. Most of the common land in Wales is used for agricultural purposes.

142. Grazing rights are frequent across commons in Wales. 52% of commons sites have associated rights to graze sheep, whilst 35% have rights to graze cattle.

143. In excess of 65% of Wales' common land is currently under 'active management'[31] under Glastir Commons.

3.3 Farm business income in the context of farm household income

144. Farm income is measured in Wales as Farm Business Income. This is a measure of farm profitability. It reflects the net profit[32] of the farm but does not include any alternative sources of household income, such as off-farm employment of spouses. There are four key sources of income included in Farm Business Income:

- Income from agriculture (livestock and crop outputs and by-products).
- Income from agri-environmental schemes (e.g. Glastir).
- Income from BPS (formerly single farm payment).
- Income from diversification (income from non-agricultural activities using farm resources).

> Farm Business Income is equal to:
> Farm Business Outputs (turnover) –
> Farm Business Inputs (costs)

145. Farm Business Income is estimated in Wales from the Farm Business Survey (FBS) which samples farms with a minimum of €25,000 annual standard output[33] (approx. £21,000 Feb 2019). There are approximately 14,000 farms in Wales that are not included in the FBS population because they are below the €25,000 threshold.

146. The sample size for this annual survey is approximately 550 farm businesses from a population of approximately 10,000 farms.

147. This survey publishes data on the main farm types in Wales, cattle & sheep and dairy. These farms are also those that receive the largest proportion of BPS total funding. We focus mainly on FBS farms from this point forward unless explicitly stated otherwise.

148. 57% of farm holdings in Wales are classified as 'very small', meaning that they do not provide enough work for one full time worker. This means two things: firstly that these farms are not included in FBS but also that these farms are likely to have alternative sources of income such as off-farm employment and income of spouses. These additional sources of income are likely to influence on-farm decisions and therefore make responses to changes in market conditions difficult to predict.

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[31] 'Active management' means an annual average stocking rate, which includes an allowance for winter grazing, or a winter exclusion period, appropriate to the mosaic of habitats over the common.

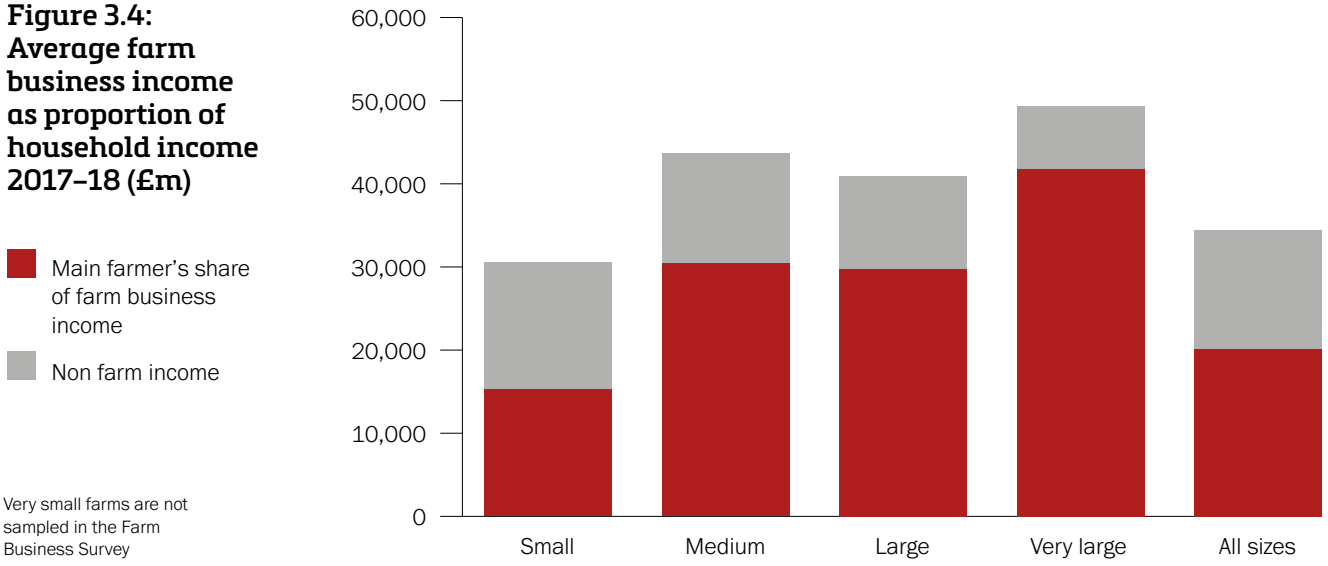
[32] Farm Business income is equivalent to financial Net Profit but the two measures differ in practice. Net Profit is derived from financial accounting principles whilst Farm Business Income is derived from management accounting principles. In financial accounting output stocks are valued at cost of production; in management accounting they are valued at market price. In financial accounting depreciation is calculated at historic cost but in management accounting it is calculated at replacement cost.

[33] Standard output (SO) is a measure of the economic size of the far. The value is calculated in Euros, and is the sum of SO per head of livestock or per hectare of land. It describes the average value of agricultural output at farm-gate prices. Economically larger farms have higher output and so higher SO values.

149. Evidence from the FBS (Figure 3.4) suggests that off-farm income is a source of income for all farm sizes but the importance of it decreases with increases in farm size. Small farms have, on average, a larger proportion of household income coming from off-farm sources than larger farms.

150. This is a Europe-wide pattern. Evidence from other countries has suggested that managers of small farms tend to put in less working time than those of bigger farms, and tend to engage more in other gainful activities outside their holdings than managers of bigger farms.

Figure 3.4: Average farm business income as proportion of household income 2017–18 (£m)



Very small farms are not sampled in the Farm Business Survey

Source: Reweighted population estimates from the Farm Business Survey

151. Average farm household income for all farm sizes in 2016-17 was estimated to be £34,434. For very large farms this rises to £49,257, whilst the small farms are estimated to have a net farm income of £30,549. These estimates take into account all income earned, both on and off the farm, by both the farmer and other inhabitants (e.g. spouse) of the household.

152. From this point forwards we focus on Farm Business Income because agricultural support in Wales is targeted at farm businesses.

153. Agricultural support schemes clearly do influence farm household finances but, as Figure 3.4 shows, the broad pattern of small farms having a smaller income and the larger farms earning more holds whether considering household or business income.

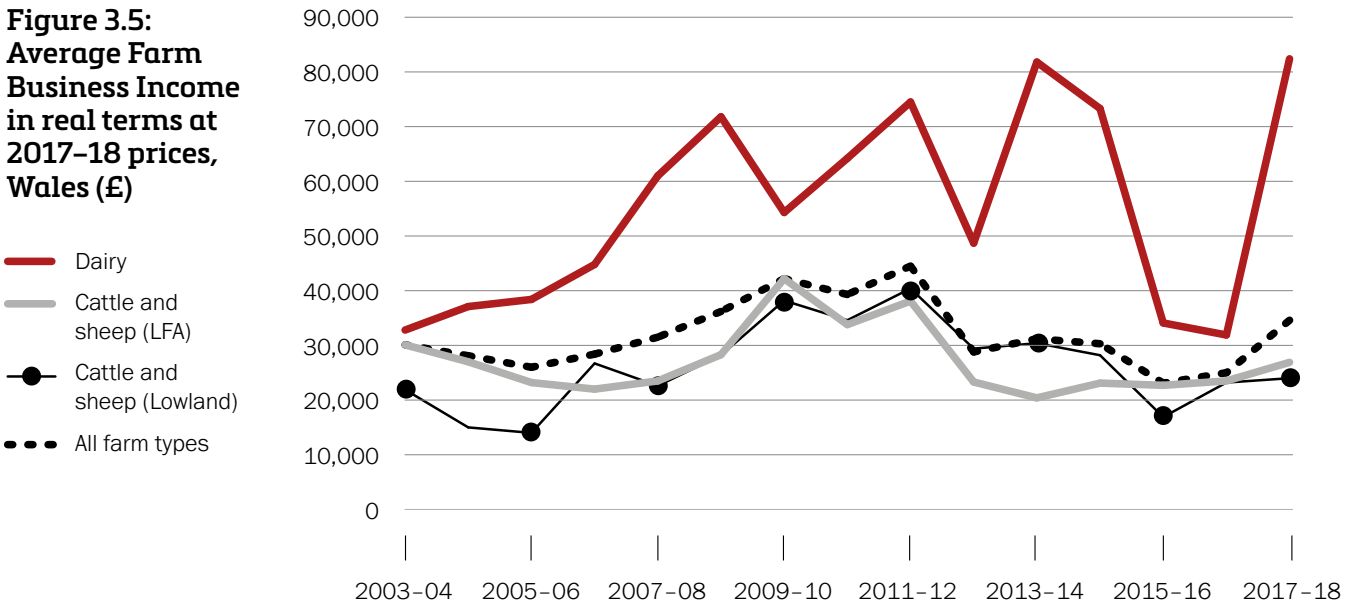
154. There is additional evidence from FBS in England that changes in farm household income are primarily caused by changes in farm business income, thus changes in household finances can be understood through understanding the business.

3.3.1 Farm business income

155. Average Farm Business Income for FBS farms dropped 17% in real terms between 2003-04 and 2016-17. Farms in Wales have on average seen business income fall 6 years out of the last 15, but there have also been years of considerable growth. Between 2016-17 and 2017-18, average farm business income rose 41%.

156. As Figure 3.5 shows, farm incomes are variable between and within both years and farm types. This reflects different market pressures.

Figure 3.5: Average Farm Business Income in real terms at 2017–18 prices, Wales (£)



157. For example, the dairy industry saw a 53% decrease in average farm income between 2014-15 and 2015-16. This was mainly due to a 25% drop in the price for milk in Wales coinciding with a higher volume of milk output in the same period. Between 2016-17 and 2017-18 average farm business income for dairy farms then rose 158%, reflecting an increase in milk prices.

158. This highlights the difficulty of farm businesses responding with speed to market changes. Many farm production decisions need to be taken months in advance and reducing or increasing output in response to the market takes time.

3.4 Farm business income by source

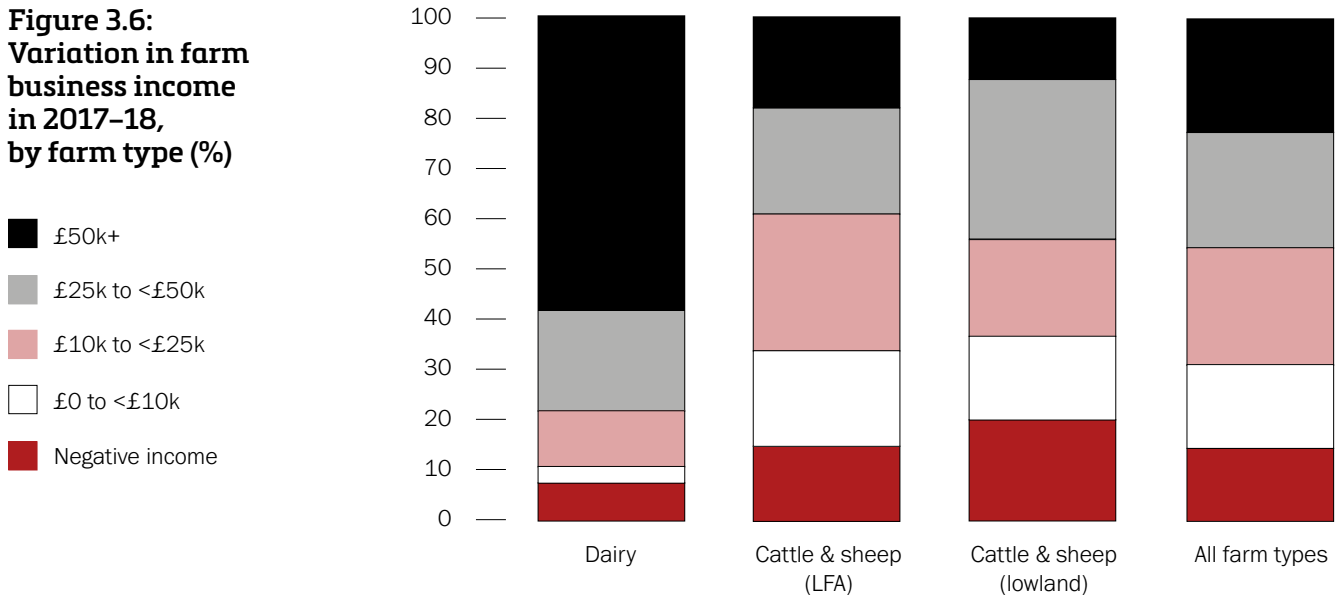
3.4.1 Components of farm income

159. The four components of farm income were noted in Section 3.3 above. Examining these income sources individually allows assessment of which components of farm business income are particularly volatile over time.

160. Variation at the farm level is large, and in each farm type there are farms at either end of the income spectrum. Additionally, income varies within farms year-on-year.

161. As Figure 3.6 shows, within each farm type there are farms that had a farm business income above £50,000 in 2017-18, but dairy farms have the highest proportion of farms in this group. Lowland cattle and sheep farms had the highest proportion of farms with negative income, and the lowest proportion earning £50,000 and over. Across all farm types, approximately 15% of farms had negative income in 2017-18.

Figure 3.6: Variation in farm business income in 2017–18, by farm type (%)



Source: Farm Business Survey

Income from agriculture

162. Table 3.7 shows that the average farm income from agriculture (net of costs) across all farm types. Lowland cattle and sheep farms showed variation in income over the 4 years of around £7,000. The variation in income from agriculture was largest for dairy farms, with a difference of around £50,000 in income between the highest and lowest years. This reflects the fluctuation in milk prices in recent years.

163. Income from agriculture was relatively stable for LFA cattle and sheep farms, albeit negative in each of the four years. This means that, on average, these farms did not make a profit from this cost centre alone. Given that average farm business income for this farm type has been positive (Figure 3.2) this suggests that profit is being made in other areas of the farm business.

Table 3.7: Income from agriculture by farm type (£)

	2014-15	2015-16	2016-17	2017-18	Difference between highest and lowest income
All farms	3,400	-1,300	-1,900	5,900	7,800
Dairy	49,200	15,200	12,800	62,400	49,600
LFA cattle and sheep	-6,000	-4,500	-6,200	-5,200	1,700
Lowland cattle and sheep	8,300	1,400	4,100	4,900	6,900

Source: Reweighted population estimates from the Farm Business Survey

Income from diversification

Table 3.8: Income from diversification by farm type (£)

	2014-15	2015-16	2016-17	2017-18	Difference between highest and lowest income
All farms	2,500	3,000	2,800	3,200	700
Dairy	1,200	1,500	1,400	1,600	400
LFA cattle and sheep	2,800	3,500	2,700	3,100	800
Lowland cattle and sheep	2,200	1,200	3,000	2,500	1,800

Source: Reweighted population estimates from the Farm Business Survey

164. Diversification describes non-agricultural activity that uses farm resources. It offers a way for farm businesses to secure an alternative income stream and create resilience in the face of market volatility.

165. 39% of FBS farms in Wales in 2017-18 undertook some form of diversification, but as Table 3.8 shows, there is little variation between farm types in the extent to which it is used to increase average farm income.

166. Table 3.9 shows estimates of the level of diversification in the population of FBS farms in Wales, and the types of activity undertaken. The most common activity is letting of buildings for non-farming use.

167. The number of farms engaged in diversification has increased 80% since 2009-10 but still represents a minority of the FBS population. The largest increase has been in renewable energy, which has increased from an estimated zero farm businesses engaging in the activity in 2009-10 to 1,714 in 2017-18. Other diversified activity[34] has seen an increase of 646% in the same period.

[34] Includes activities such as rural crafts and non-agricultural contract work.

Table 3.9: Diversification on FBS farms in Wales, 2009-2018

	Year								
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Total number of FBS farms:									
	9,226	9,160	9,381	10,102	9,898	9,783	9,826	9,629	9,668
Total number of farms undertaking diversified activity[(a)]:									
	2,117	**2,046**	**2,404**	**3,047**	**3,083**	**3,281**	**3,605**	**3,689**	**3,806**
Of which:									
letting buildings for non-farming use	1,654	1,479	1,477	1,499	1,565	1,646	1,605	2,103	2,223
processing/retailing of farm produce	103	66	143	110	129	50	62	49	80
sport and recreation	240	264	318	422	233	325	350	342	405
tourist accommodation and catering	187	208	260	334	342	373	259	300	268
renewable energy[(b)]	0	8	331	924	1,058	1,183	1,400	1,584	1,714
other diversified activity	208	389	477	337	430	622	660	352	1,552

(a) The number of farms will not add up to the total as farm businesses can engage in more than one form of diversification.

(b) Renewable energy includes power generating, wind turbines, solar power, anaerobic digester and from 2014-15 onwards, renewable heat initiatives.

Source: Reweighted population estimates from the Farm Business Survey

Income from agri-environment schemes

Table 3.10: Income from agri-environmental schemes by farm type (£)

	2014-15	2015-16	2016-17	2017-18	Difference between highest and lowest income
All farms	4,400	4,400	4,200	4,900	700
Dairy	1,300	1,400	900	1,700	800
LFA cattle and sheep	5,800	5,900	5,600	6,300	700
Lowland cattle and sheep	1,100	1,100	1,600	2,300	1,200

Source: Reweighted population estimates from the Farm Business Survey.

168. Income from agri-environmental schemes (net of costs) is a relatively stable source of income for all farms, showing greatest variation for lowland cattle and sheep farms, although for these farms income from agri-environment is the least variable income source.

169. This reflects the long-term nature (5 years or more) of agri-environmental scheme contracts for programmes such as Glastir.

Income from BPS/Single Farm Payment

Table 3.11: Income from BPS by farm type (£)

	2014-15	2015-16	2016-17	2017-18	Difference between highest and lowest income
All farms	18,700	16,200	19,400	20,500	4,300
Dairy	18,500	14,700	16,200	16,700	3,800
LFA cattle and sheep	19,500	17,000	21,000	22,700	5,700
Lowland cattle and sheep	15,300	12,700	14,100	14,200	2,600

Source: Reweighted population estimates from the Farm Business Survey

170. Income from BPS/Single Farm Payment (net of costs) shows the second largest variation as a source of income over the 4 years. The variation is greatest for LFA cattle and sheep farms (albeit strongly positive, unlike income from agriculture) and lowest for lowland cattle and sheep farms.

171. Some of this variation has been driven by CAP reforms, this is explored in Chapter 4.

3.5 Cost profile

172. Agricultural costs can be split into fixed costs and variable costs. Variable costs can be allocated to a particular enterprise within the farm business. These costs include feed, fertilisers, seed, pesticides and purchased fodder.

173. Fixed costs are those that are not related to any particular enterprise within the farm business. Fixed costs include labour, machinery, interest payments and rent.

174. Figure 3.7 shows the split between fixed and variable costs in FBS farms by type of farm.

175. Variable costs are, on average, the largest source of costs for farms in Wales but there is variation within and between farm types. Lowland cattle & sheep farms tend to have higher relative fixed costs, whilst dairy and LFA cattle & sheep have higher relative variable costs.

Figure 3.7: Components of Agricultural Costs by Farm Type, Wales, 2017–18 (£)

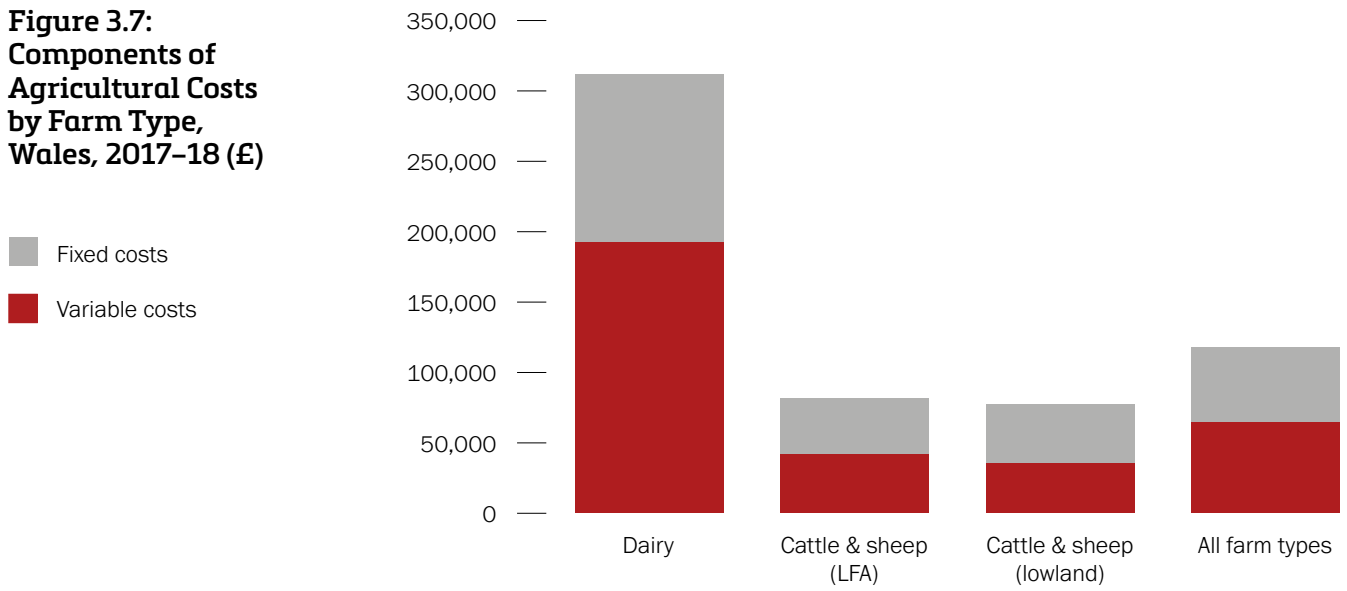


Table 3.14: Detailed breakdown of average agricultural costs for farms in Wales, by farm type, 2017-18 (£)

	All Farm Types	Dairy	Cattle & sheep (LFA)	Cattle & Sheep (lowland)
Farm business costs	124,700	317,600	89,000	82,600
Agricultural costs	118,100	312,000	82,000	77,500
Variable costs	64,600	192,400	41,900	35,400
Crop costs	11,200	21,100	7,200	8,800
Livestock costs	44,800	146,600	29,500	21,500
Purchased feed & fodder	27,000	99,100	16,800	9,100
Home grown feed & fodder	1,800	4,600	600	2,900
Veterinary fees & medicines	5,000	11,300	4,400	2,400
Other livestock costs	11,000	31,600	7,700	7,100
Contract costs	6,600	21,100	3,600	4,700
Casual labour	1,900	3,600	1,600	400
Fixed costs	53,500	119,500	40,100	42,100
Regular labour	4,000	15,000	1,800	2,600
Machinery costs	23,700	41,500	19,700	19,800
General farming costs	13,800	32,000	10,300	10,300
Land and property costs	10,600	30,200	6,600	8,200
Miscellaneous fixed costs	1,500	900	1,700	1,200

Source: Reweighted population estimates from the Farm Business Survey

176. The figures in Table 3.14 show that:

- Livestock costs are the highest variable cost for all farm types. They represent on average 69% of all variable costs (all farm types).
- Of livestock costs, purchased feed and fodder are the largest cost type for all farm types ranging from 68% of livestock costs for dairy farms to 42% for lowland cattle and sheep.
- After feed/fodder costs, 'other livestock costs' have the second highest share of livestock costs for all farm types. These costs represent on average 25% of costs. This category of costs includes disinfectants, marketing, product storage and breeding costs.

3.6 Agricultural output and profit by farm economic size

177. There is large variation between farms in Wales in the profit or loss made from agriculture.

178. A profit is made when output is greater than the inputs of both variable and fixed costs.

179. Figure 3.8 shows Farm Business Survey farms in Wales split by agricultural output and level of profit made from agriculture in 2017-18.

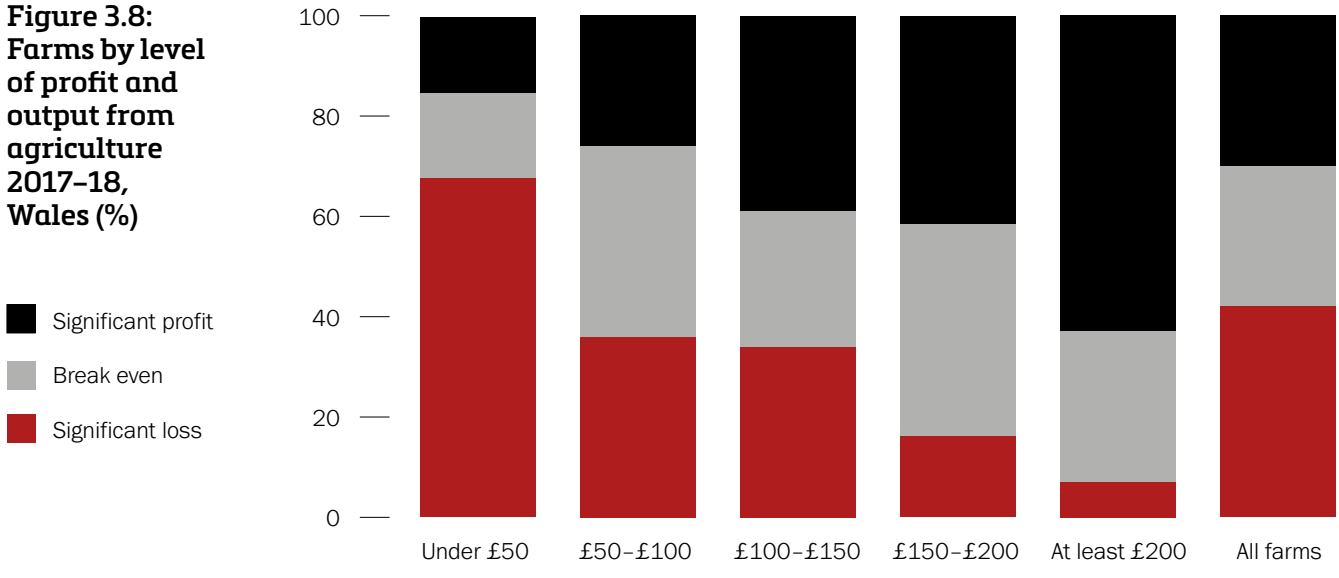
180. This does not show profit that may have been made in other areas of the business (diversification, agri-environmental schemes or BPS) and therefore gives an indication of business performance from agriculture alone.

181. Farms with a 'significant loss' were those that lost more than £10 for every £100 in costs. Farms that 'breakeven' were those that made between £10 loss and £10 profit for every £100 spent, and farms with a significant profit made more than £10 for every £100 in costs.

182. Of farms that had an agricultural output below £50,000, 67% made a significant loss from agriculture in 2017-18 whilst 7% of farms with an agricultural output of £200,000 or over made a loss in this part of the farm business in 2017-18.

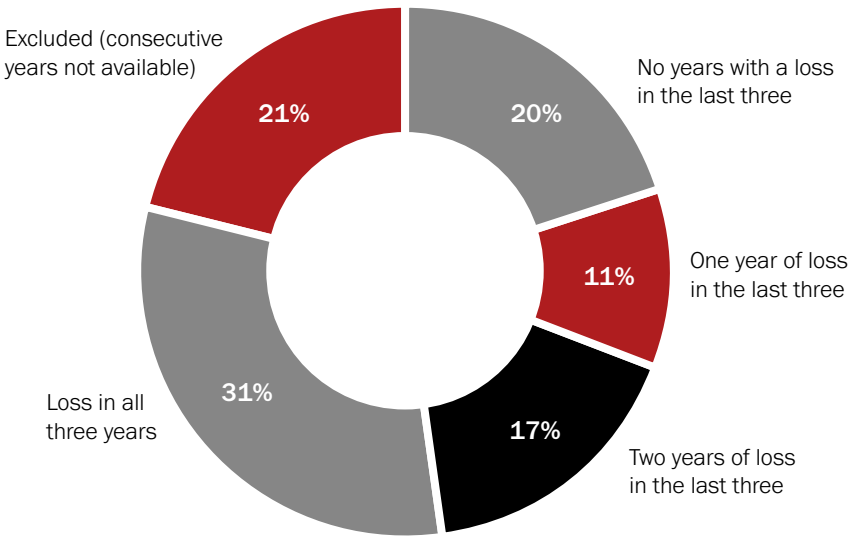
183. A higher proportion of the economically larger farms made a significant profit than smaller farms. However, there are farms in each size group that are breaking even, or making a significant profit from agricultural activities. This suggests that there are factors independent of farm size that contribute to farm performance.

Figure 3.8: Farms by level of profit and output from agriculture 2017–18, Wales (%)



Source: Reweighted population estimates from the Farm Business Survey

Figure 3.9: Farm businesses by years with a loss in agriculture over the past 3 years, Wales, 2013–14 to 2016–17 (%)



Source: Farm Business Survey

184. Figure 3.9 shows FBS farms in Wales grouped by the number of years in the last three that they made a loss from agriculture. 'Excluded' farms are the farms that have not been in the population for three consecutive years.

185. This breakdown gives an indication of performance consistency of farm businesses in Wales.

186. Across farm types, 59% of farms made a loss in 1, 2 or 3 of the past 3 years.

187. 31% of farms did not make a profit from agriculture in any of the last 3 years, whilst 20% made a profit in every year.

3.7 Farm performance

188. Research has suggested that less than 5% of the variation in farm performance in grazing livestock farms is due to geographic differences such as topography and climate.

189. Understanding what other factors drive the variation is key to understanding how farms deal with the inherent volatility of agriculture.

190. A 2018 report by AHDB and others on the characteristics of high performing farms in the UK included a comparison of top and bottom performing matched LFA grazing livestock farms, and gave the following figures:

Table 3.15: Significant variables between top- and bottom-performing counterparts[a]

	Mean of top performers	Mean of matched bottom performers
Agricultural output (£)	133,900	83,400
of which %:		
Proportion of finished cattle	30%	20%
Proportion of finished sheep	70%	50%
Tenancy		
Farm Business Tenancy land	29%	16%
Full Agricultural Tenancy land	17%	32%
Total agricultural costs (£)	128,700	126,800
of which %:		
Agriculture overheads	46%	52%
Agriculture variable costs	54%	48%
Fertiliser costs	7%	5%
General farming costs	10%	16%

(a) The report uses Farm Business Survey data for England for 2011-12 to 2015-16. Data is averaged across years to smooth out the effects of annual volatility for individual farms. The approach to comparing performance levels across farms is to compare the top and bottom quartiles. The approach used is to match higher-performing farms with lower-performing counterparts with similar characteristics and to then assess the differences between these pairs of matched farms.

Source: AHDB (2018). Numbers rounded

191. The report notes that:

- the top-performing farms have a similar agricultural area to their matched counterparts in the bottom half of the performance distribution;
- the level of costs for the top and bottom performers is similar, but the top performers generate considerably more output for these inputs. This could be either more volume of output or greater value per unit, or both;
- finished cattle and sheep account for a greater proportion of output for the higher-performing farms;
- higher-performing farms have a greater level of Farm Business Tenancy land (and lower level of Full Agricultural Tenancy land) than the lower performers;
- top performers have lower overheads, reflecting a more efficient use of capital, but have higher variable costs, demonstrating their eagerness to invest in crops and livestock; and
- general farming costs, which include energy, fuel, insurance and bank charges, are lower for the top performers.

192. The report identified the following top traits of high performing farms, commenting that *"ranking them is difficult as their impacts vary from farm to farm according to farming systems, the farmer's personality and attitude, current levels of farm management, staffing and control costs"*.

For a general perspective of importance overall, the report lists the following in order:

- Minimise overhead costs:
- Set goals and budgets
- Compare yourself and gather information
- Understand the market
- Focus on detail
- Have a mindset for change and innovation
- Continually improve people management
- Specialise.

3.8 Assets, liabilities and net worth

193. Considering assets, liabilities and net worth of a farm gives an indication of the financial strength of the business, and potential ability to respond to changes.

194. Farm business assets can be borrowed against and help a farm withstand low farm business income.

195. Table 3.16 shows estimated average assets, liabilities and net worth by farm size for farms from the Farm Business Survey population in 2017-18.

196. Net worth increases with farm economic size, as does the level of debt, reflective of higher borrowing power.

Table 3.16: Assets, liabilities, and net worth by farm size, Wales 2017-18 (£)

	Assets – land and buildings	Assets – other fixed	Assets – current	Liabilities – fixed	Liabilities – current	Net worth
By size						
Spare & part time	624,800	78,000	50,300	-26,500	-10,200	716,500
Small	605,300	106,300	56,900	-32,600	-15,100	720,800
Medium	944,700	174,700	70,900	-46,100	-26,600	1,117,600
Large	1,018,200	234,300	103,400	-85,600	-30,200	1,240,200
Very large	1,815,800	467,600	162,900	-322,900	-101,100	2,022,200
All sizes	**937,400**	**194,500**	**83,900**	**-88,800**	**-32,400**	**1,094,600**

Source: Reweighted population estimates from the Farm Business Survey

Chapter 4: The Basic Payment Scheme in Wales

Introduction

197. This chapter considers the Basic Payment Scheme (BPS) in Wales. It provides information about the scheme structure, and the distribution of BPS payments. It considers farm incomes with and without income from BPS and evidence concerning the greening component of the scheme.

4.1 Background

198. The 2006/7 reforms to the EU Common Agricultural Policy saw the move away from production-based subsidies to the Single Payment Scheme (SPS). SPS was calculated based on an average of what claimants had received previously from CAP production-based subsidies. In January 2015, the Basic Payment Scheme (BPS) replaced the SPS.

199. In Wales, the Welsh Government announced it would implement a flat rate BPS payment by 2019, coupled with a redistributive payment covering the first 54 hectares of each claim

200. Redistributive payments give farmers extra financial support for the first 54 hectares of entitlements. The Welsh Government opted to use this scheme from 2015 to soften the transition to flat rate payments and provide farmers with smaller farms (and incomes) with additional income support. We provide more information on this element of BPS in section 4.7, below.

201. The new BPS also included:

- introduction of the 'active farmer' rule
- the minimum claim size increasing from 0.3ha to 5ha
- the start of transition from payments based on historic entitlements to a flat rate awarded per hectare of land
- the introduction of the redistributive payment to ease the transition to flat rate payments
- the transfer of 15% of the budget of Pillar 1 (BPS) to Pillar 2 (Agri-environmental schemes)
- BPS greening rules.

4.2 Total claimants and the size of the BPS budget

202. BPS payments are made on a continuous basis, so the number of claimants in 2016, at around 15,500, reflects the number of claimants paid at the date the data was extracted.

203. The number of BPS/SPS claimants decreased slightly between 2010 and 2014.

204. There was a reduction in the number of claimants in 2015 following the introduction of the 'active farmer' rule. This rule required that all claimants must be carrying out 'agricultural activity' on the land for which they were claiming entitlements.

Table 4.1: Number of claimants and total amount paid through SPS and BPS in Wales

Year	Number of claimants	Amount paid (£ million)
Single Payment Scheme:		
2010	16,584	267.8
2011	16,501	267.7
2012	16,456	246.3
2013	16,403	251.4
2014	16,125	208.4
Basic Payment Scheme:		
2015	15,500	190.0
2016	15,445	224.0

Source: Welsh Agricultural Statistics, 2016

205. The total amount paid decreased between 2010 and 2015. It fell particularly in 2014 when the pound was strong against the euro[35]. Whilst the value of funds allocated in euros to Wales has remained constant since 2014, the total amount in pounds sterling has varied by approximately £77million due to variation in the exchange rate.

206. The exchange rate also influences the amount paid per hectare. In practice this means that claim amounts also vary annually. When the pound is weak then BPS payments increase whilst when the pound is strong then payments fall.

207. CAP reforms have also caused variation in BPS payments, particularly in 2014. The 2014-2020 reforms required Member States to transition to a flat-rate payment per hectare by 2019, and the total EU budget for the period was 3.5% lower in real terms than it was in 2007-2013. The average allocation per Member State in the 2014-2020 period was 6.9% lower than the average for 2007-2013. This was the first time that the EU had reduced the total CAP budget.

Table 4.2: EURO-GBP exchange rate set by EU for SPS and BPS

	EURO-GBP Exchange Rate
2018	€1 = £0.8928
2017	€1 = £0.8947
2016	€1 = £0.8523
2015	€1 = £0.7313
2014	€1 = £0.7773

Source: Defra

[35] The total payment package is set in euros and then converted from euros to pounds in order to be paid to Wales. The exchange rate for this conversion is chosen as the average of the European Central Bank EURO-GBP exchange rate in September. Prior to the introduction of the BPS, the exchange rate was set using the European Central Bank exchange rate as at 30 September for that year.

4.3 Distribution of BPS

208. Figure 4.1 shows the cumulative distribution of 2017 BPS claimants and payments. It gives an indication of how payments are spread amongst recipients.

209. Table 4.3 shows the distribution of payments in 2017 broken down by the payment amount.

210. The distribution of BPS payments amongst claimants is skewed. 47% of claimants received under £10,000 each in 2017. This represented 15% of all payments.

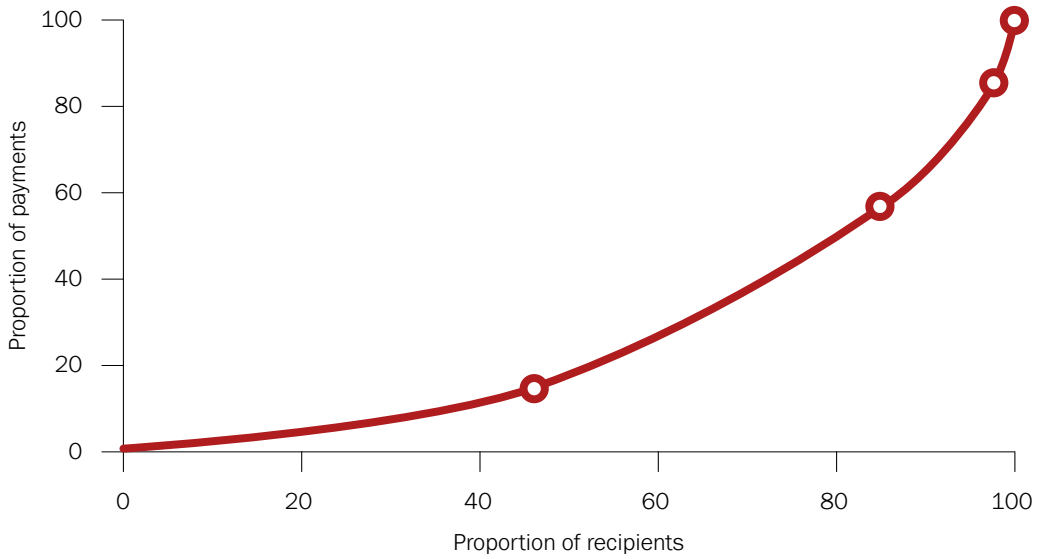
211. 38% of BPS claimants received between £10,000 and £25,000. This represented 41% of payments.

212. Together, claimants paid under £25,000 represented 84% of claimants and 56% of payments.

213. Fewer claimants are paid £25,000 or over but these claimants receive a larger share of total payments. Payments between £25,000 and £50,000 were paid to 12% of claimants and represented 28% of the total BPS payment.

214. At the highest end, 3% of claimants received over £50,000 each in BPS. This represented 16% of all payments.

Figure 4.1: Distribution of BPS payments in Wales, 2017 (%)[a]



(a) All RPW data provided here excludes cross border farms (farms in England paid by Wales and in Wales paid by England).

Source: Rural Payment Wales for 2017 payment year

Table 4.3: Distribution of Basic Payment Scheme payments by level of payment on a farm, 2017

£'000	Values		Share of total	
Payment on a farm	Claimants	£ millions	Claimants	£ millions
Under 2.5	1,870	3.1	12.4%	1.4%
2.5 to 5	2,068	7.6	13.7%	3.4%
5 to 10	3,051	22.5	20.3%	10.0%
10 to 15	2,698	33.5	17.9%	15.0%
15 to 20	1,819	31.5	12.1%	14.1%
20 to 25	1,197	26.7	8.0%	12.0%
25 to 50	1,870	62.7	12.4%	28.1%
50 to 100	411	27.0	2.7%	12.1%
100 to 400	62	8.6	0.4%	3.9%
Total	**15,046**	**223.2**	**100.0%**	**100.0%**

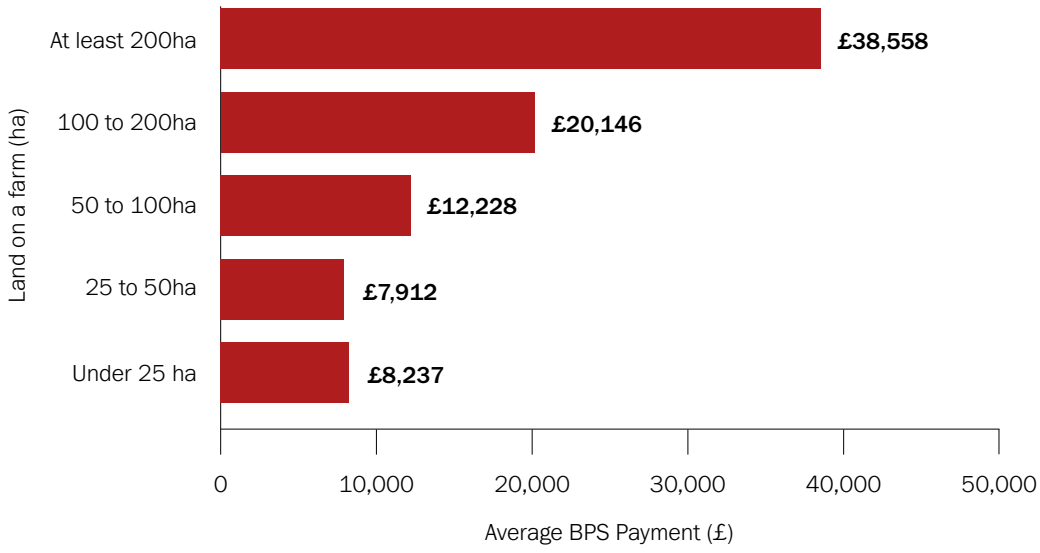
Source: Rural Payment Wales for 2017 payment year

4.4 BPS distribution and land on a farm

215. BPS in Wales is currently transitioning to flat-rate payments. This transition is due to be completed in 2019 when all farms will receive the same 'BPS per hectare rate'.

216. Paying per hectare means that farms with a larger agricultural area receive more support. This is shown in Figure 4.2. Farms with a land area of 200ha or over receive on average £38,558 whilst farms with less than 25ha receive on average £8,237.

Figure 4.2: Average BPS claim amount by land on the farm in Wales, 2017



Source: Rural Payment Wales for 2017 payment year

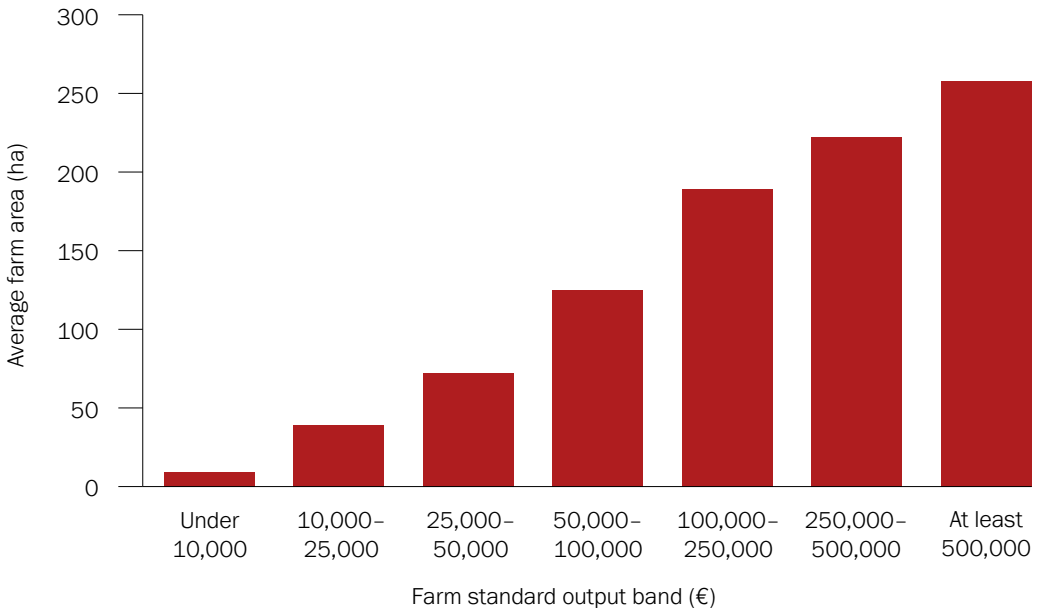
4.5 BPS distribution by standard output

217. Figure 4.3 shows the Welsh Agricultural Survey population split according to level of standard output[36] and average farm area.

218. Standard output gives a measure of the economic size of a farm in euros. It considers output from agriculture.

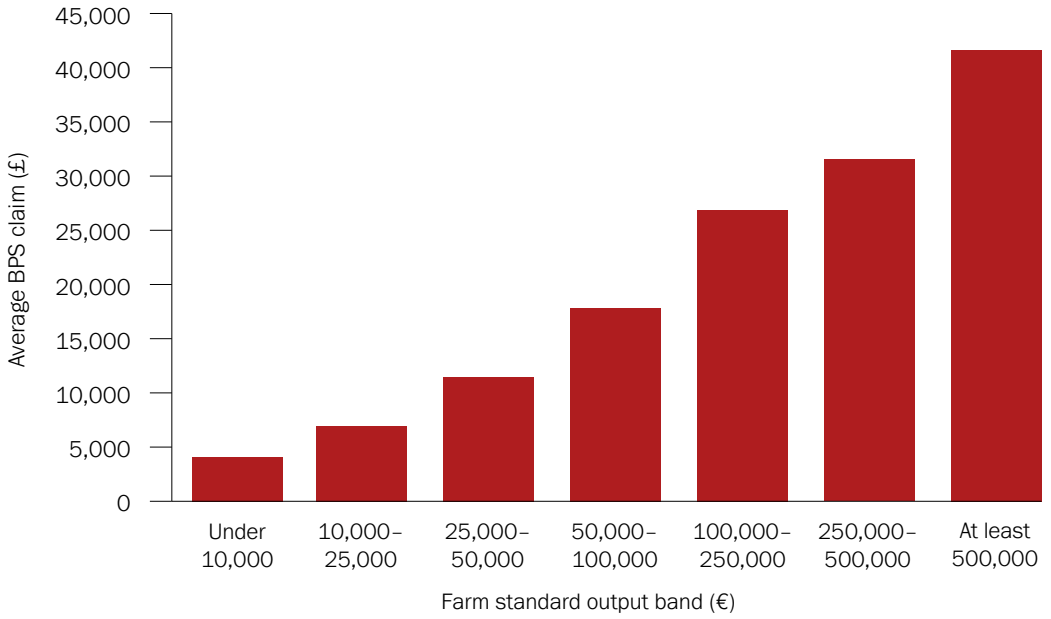
219. Farms with the largest farm area also tend to be the economically larger farms. The average amount of land on a farm increases with standard output. Farms with a standard output over €500,000 had an average farm area of 258ha in 2017. This is in contrast to farms with a standard output below €10,000 which had an average farm area of 9ha.

Figure 4.3: Average farm area by farm standard output in Wales, 2016–17



Source: Rural Payment Wales for 2017 payment year

Figure 4.4: Average BPS payment by standard output band in Wales 2016–17



Source: Rural Payment Wales for 2017 payment year

[36] Standard output (SO) is a measure of the economic size of the farm. The value is calculated in Euros, and is the sum of SO per head of livestock or per hectare of land. It describes the average value of agricultural output at farm-gate prices. Economically larger farms have higher output and so higher SO values.

220. Figure 4.4 shows the Welsh Agricultural Survey population split according to standard output band and the average BPS claim.

221. Farms in the largest standard output band received an average BPS payment of £41,163 in 2016-17 whilst farms with a standard output below €10,000 received on average £4,084 in payments. This is because economically larger farms tend to have a larger area, as shown in Figure 4.3, which results in higher payments from the per-hectare BPS.

4.6 Average BPS by farm type

Table 4.4: Average Basic Payment amount in Wales by farm type, 2017

Farm Type	Average BPS payment (£ per farm)	Proportion of Claimants (%)	Proportion of Payments (%)
All Claimants	£14,110	100%	100%
Micro sheep/beef[(b)]	£5,600	23%	9%
Micro others[(b)]	£4,700	5%	2%
Small – sheep/beef SDA[(c)]	£21,600	25%	37%
Small – sheep/beef DA[(c)]	£15,300	10%	11%
Small – sheep/beef lowland[(c)]	£14,500	6%	6%
Small – others[(c)]	£14,400	7%	7%
Larger – dairy[(d)]	£26,100	6%	10%
Larger sheep/beef[(d)]	£59,300	2%	8%
Larger – others[(d)]	£31,900	1%	2%
Unknown[(a)]	£7,000	16%	9%

Note: (a) Farms unable to match to survey population. Farms classified according to dominant activity and economic size.
(b) Standard Output under €25,000.
(c) Standard Output €25,000 to €250,000.
(d) Standard Output at least €250,000.

Source: Welsh Agricultural Survey and RPW payments data

222. Table 4.4 shows again that economically larger farms received a higher average BPS payment in 2017, and this difference persists when examining by farm type.

223. Of all farm types, micro sheep/beef farms had the largest discrepancy between the proportion of claimants and the proportion of payments. This reflects that farms in Wales tend to be small in terms of the number of hectares farmed and so will receive lower payments under the area-based BPS.

4.7 Redistributive Payments

224. 50% of farm holdings in Wales are 25 hectares or smaller. These farms have an average Standard Output of €28,652.

225. CAP reforms in 2013 gave Member States the option to implement a redistributive payment from 2015-2020. This reform allowed extra payment for the first hectares and so provided a mechanism through which small farms could be provided with additional support.

226. Nine Member States and regions have chosen to adopt redistributive payments. Wales has done so since 2015. The scheme is funded by deducting from the main BPS fund, and imposing a percentage cap on any payments above €150,000.

227. Member States were able to decide what threshold would be applied for the redistributive payment, and the rate of payment applied on these first hectares.

228. Welsh Government implemented the maximum threshold available, 54ha, thus benefitting the 63% of farmers in Wales that have farms 50ha or smaller.

229. This has gone some way to addressing the skew of BPS away from the larger, more economically productive farms but it still remains the case that small farms receive lower average payments.

4.8 Profitability and the BPS

4.8.1 Average income by farm size with and without BPS

230. Table 4.5 shows the population of FBS farms classified according to whole farm output. This reflects all revenue from the farm (agriculture, diversification, BPS, agri-environmental schemes).

231. BPS income has been deducted from the average farm business income for each farm size to give a static estimate of the impact of removal on farm incomes.

232. The table shows that, on average, farms with a whole farm output below £100,000 would have had a negative farm business income without BPS in 2016-17.

233. These averages do not reflect the high level of variation both within and between farm types.

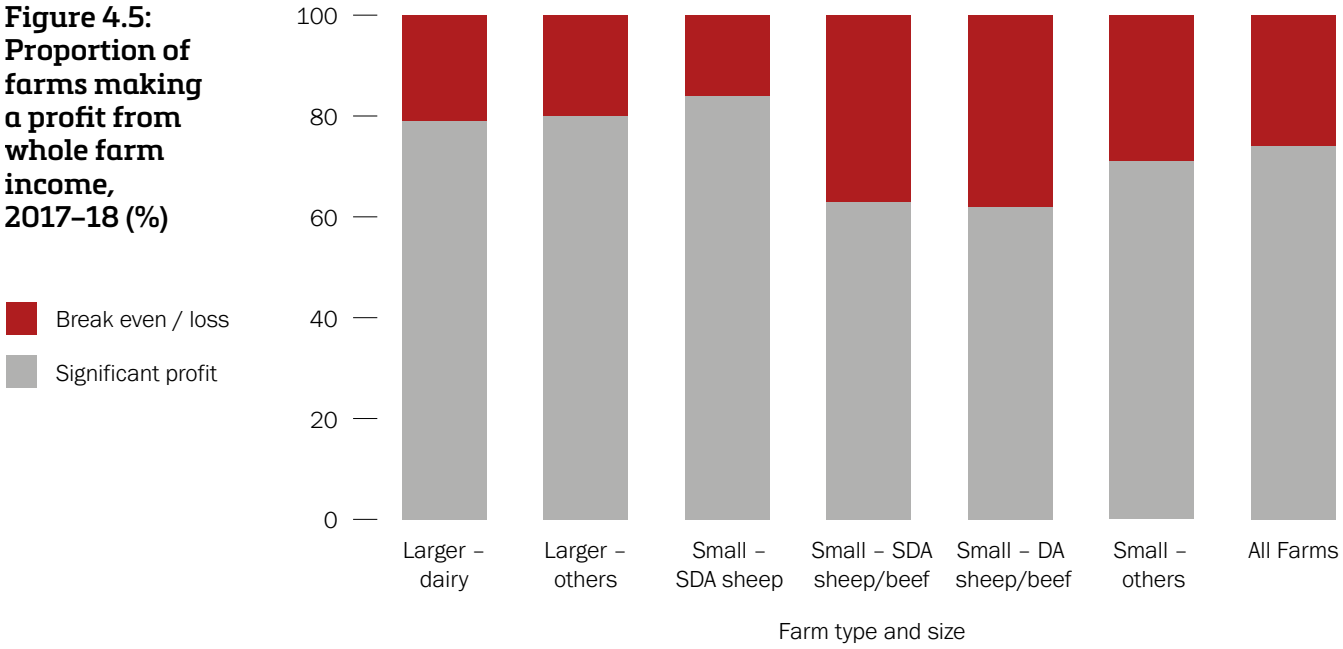
Table 4.5: Average Farm Business Income in 2016-17 by farm size: with and without BPS

Whole farm output	Number of farms	Income less BPS	Income with BPS
Wales total	9,629	£5,146	£24,501
Under £50,000	1,983	-£7,626	£1,210
£50,000 to £100,000	3,021	-£1,025	£13,665
£100,000 to £250,000	3,277	£7,002	£30,234
At least £250,000	1,348	£33,257	£69,118

Source: Reweighted population estimates from the Farm Business Survey

4.8.2 Farms that made a profit without BPS

Figure 4.5: Proportion of farms making a profit from whole farm income, 2017–18 (%)



Source: Farm Business Survey

234. Figures 4.5 and 4.6 shows the population of FBS farms grouped according to dominant activity and economic size. Economic size is calculated according to level of agricultural output (revenue in £). Farm businesses with an agricultural output of £150,000 or over are classed as 'larger', farms with an output below this value are classed as 'small'. Dominant activity is assigned where at least two thirds of standard output on a farm comes from a particular agricultural activity.

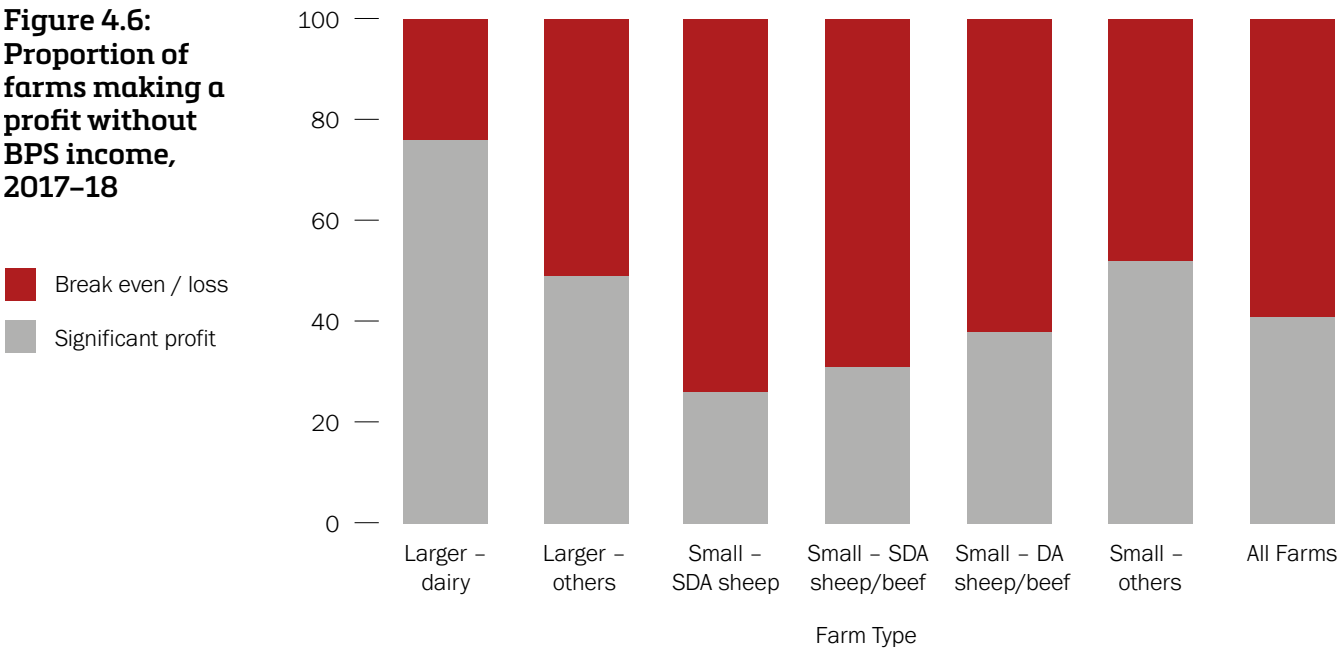
235. In 2017-18, 74% of FBS farms in Wales made a significant profit from their whole farm business i.e. more than £110 in output for every £100 in costs.

236. 26% of farm holdings either broke even, or made a loss, from the whole farm business. This meant that for every £100 in output, these farms had £90 or more in costs.

237. Small sheep/beef farms in the Disadvantaged Area were the group with the highest proportion of farms not making a significant profit (38% of farms).

238. Larger farms, both dairy and other types, were the group with the largest proportion making a significant profit from whole farm income.

Figure 4.6: Proportion of farms making a profit without BPS income, 2017–18



Source: Farm Business Survey

239. Without BPS, the proportion of all FBS farms that made a loss/broke even rises to 59%. The proportion of farms that made a profit without BPS was 41% in 2017-18.

240. Small SDA sheep farms are the farms that tend to be most dependent on BPS. Whilst 16% of these farms do not make a significant profit when considering all sources of business income, this rises to 74% when BPS income is removed.

241. SDA sheep/beef farms are also the farm type to receive the highest proportion of BPS payments (37%).

242. These averages do not show the large amount of variation between individual farms. There are farm businesses within each group that have a positive farm business income without BPS.

4.9 BPS, land prices and rents

243. Agricultural land prices, including rental prices, depend on the supply and demand conditions and influencing factors. The different balance of these factors (reflecting some element of local conditions and land characteristics) leads to spatial variation in prices. Only a limited amount of agricultural land tends to change ownership each year – Defra suggest a figure of around 0.25% of the utilisable agricultural area in England and Wales in 2016. This limited land availability in combination with buoyant demand, tends to support higher prices.

244. Economic evidence suggests that direct payments are likely to have supported higher land and rental prices than would otherwise have been the case. Given that the provision of direct payments increases the potential financial return (profits) available from agricultural land ownership (through securing the entitlement to public subsidy), this raises the demand for such land, and hence leads to increases in both agricultural land prices and the rents sought by landowners from tenants.

245. As a consequence, some of the value of the direct payment made to farmers becomes indirectly accrued as income to landowners through increased rent, with farms using rented land facing higher costs (particularly wholly tenanted farms). The effects of direct payments on land rents are likely to vary across farms depending on their specific characteristics. The benefits of direct payments and increased land values (as assets) are received by owner-occupier farmers.

246. Higher prices for agricultural land for rent and purchase have the effect of raising the costs of both entry for new farmers and for those seeking the expansion of existing farm businesses. To the extent that these constraints prevent more innovative or productive farmers from taking up new opportunities, such distortions give rise to wider adverse implications for agricultural performance.

4.10 BPS and greening

247. The BPS is accompanied by greening measures, implemented in Member States for the first time in 2015, and were designed to ensure that farmers should undertake agricultural practices that are beneficial for the climate and environment. Greening is not optional for farmers – they are unable to forego the greening payment and still claim the remaining BPS payment.

248. In Wales, the Greening payment is funded by a 30% "top slice" of the Welsh Direct Payments (Pillar 1) budget. The key elements of the greening payments in Wales are as follows:

- Greening payments are made using a percentage of the total value of an individual farmer's BPS payment, that percentage is calculated each year by dividing the Greening budget by the total value of all BPS entitlements activated.
- There are three elements that make up the Greening practices:
  - Permanent Grassland.
  - Crop Diversification.
  - Ecological Focus Areas (EFA) (Farmers with more than 15 ha of arable land must have EFA options that add up to at least 5% of the arable area on their farm).
- Greening applies to all the eligible agricultural land, even if that land is not being used to activate BPS entitlements for payment.

249. The European Court of Auditors (2017) examined the design of the greening measures and its first two years of implementation (2015 and 2016). Their examination, which was EU wide and not focussed on any single Member State, included looking at the coherence between greening and the other CAP environmental instruments of the CAP, i.e. cross-compliance and the environmental measures under rural development. Their method included a "focused desk review on the risk of double funding" in 10 Member States, including the UK (Wales).

250. Overall, the Court of Auditors concluded:

- greening, as currently implemented, is unlikely to significantly enhance the CAP's environmental and climate performance.
- the budget allocation for greening is not justified by the policy's environmental content, and that the green payment remains, essentially, an income support scheme
- greening is unlikely to provide significant benefits for the environment and climate, mainly because of the significant deadweight which affects the policy. In particular, they estimate that greening led to changes in farming practices on only around 5 % of all EU farmland.

251. The Court of Auditors also concluded that greening, as currently implemented, is unlikely to provide significant benefits for the environment and climate. They note Commission statistics from 2016 that 77% of farmland belonged to farm holdings which were under at least one greening obligation. From a sample of 145 farm holdings, the Court of Auditors found that on most holdings in our sample the introduction of greening did not require any change in farming practices. This was either because the holdings concerned already met the greening requirements in 2014 or because they were exempt.

252. However, the Auditors did cite evidence from their separate Annual Report of some positive changes in farming practices following the introduction of the scheme, especially in terms of EFAs. For those holdings where the introduction of greening did result in a positive change in farming practice, they estimated the share of arable land on which such changes occurred was around 15% for crop diversification and around 4% for EFAs. Taking into account the holdings on which no change of farming practices was required at all, as well as the fact that arable land makes up around 60% of all farmland in the EU, this means that around 1% of EU farmland required more crop diversification, and around 1% required new EFAs following the introduction of greening. They also note that EFAs can produce benefits which extend well beyond their boundaries (e.g. a buffer strip with wild flowers may provide a habitat for pollinators, which would then spread over the neighbouring parcels).

253. The Court of Auditors raised the issue of deadweight[37] which is described as "significant" and was due to:

- the modesty of greening requirements, which generally reflect the normal farming practice;
- the number of farms exempt from the greening requirement; and
- overlaps between greening and cross-compliance concern – meaning that certain features or practices which are protected or required under GAEC[38] or SMR[39] which (at the same time) can be declared to satisfy the EFA requirement.

254. In terms of biodiversity, the Court of Auditors noted that the predominance of productive Ecological Focus Areas together with insufficient management requirements reduce the potential benefits of greening for biodiversity.

[37] A situation where a subsidised activity or project would have been wholly or partly undertaken without the public aid.

[38] Good Agricultural and Environmental Condition. Collective term for a set of basic standards, applicable under cross compliance, defining good agricultural and environmental condition of land.

[39] Statutory Management Requirements. A collective term for a set of obligations defined in the respective EU legislation on the environment, climate change, public, animal and plant health, and animal welfare, and applicable under cross-compliance.

Chapter 5: Trade

Introduction

255. This chapter considers the trade in major agricultural commodities (beef, sheep and dairy produce), at a UK and at a Welsh level. We have chosen these three sectors as Table 1.1 (in Chapter 1) shows that, collectively, they made up 74% of Welsh agricultural output in 2017[40].

256. Understanding these trade flows is important, since the UK plans to leave the EU in 2019. In this chapter, we do not include forecasts of the impacts on this trade under different Brexit scenarios. Detail of these will be found in the report from the Minister for Environment, Energy and Rural Affairs' Evidence and Scenarios roundtable sub-working group report, "Summary of EU Exit Scenario Planning Workshop". They are also summarised in the "Brexit and our Land" consultation.

5.1 Beef

257. Consumers in the UK consumed just over 1.2m tonnes of fresh/frozen and processed beef and veal in 2017, of which 37% was imported and 63% home produced. Total UK consumption of fresh/frozen and processed beef and veal has risen by 6.5% in the period 2009-2017, with imports increasing by almost 10% in the same period. UK production increased by 8%, and exports by 33%.

Table 5.1: Beef and veal balance sheet, UK, 2009–2017, '000 tonnes

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Production	833	909	936	885	847	877	885	912	902
Imports[(a)]	404	397	384	406	393	414	431	426	443
Exports[(b)]	105	137	174	148	132	142	132	143	140
Total consumption	1,10	1,169	1,147	1,144	1,108	1,149	1,183	1,150	1,204

(a) Imports include fresh/frozen beef and processed beef

(b) Exports include processed meat

Source: AHDB (figures rounded to nearest whole number)

258. In 2017 the UK imported just over 340,000 tonnes of fresh/frozen beef and veal (and 102,000 tonnes of processed beef and veal) of which 70% was from Ireland, and 8% from Holland. In total, Ireland and the rest of the EU supply over 90% of UK beef imports. No single non-EU country supplies more than 3% of the total.

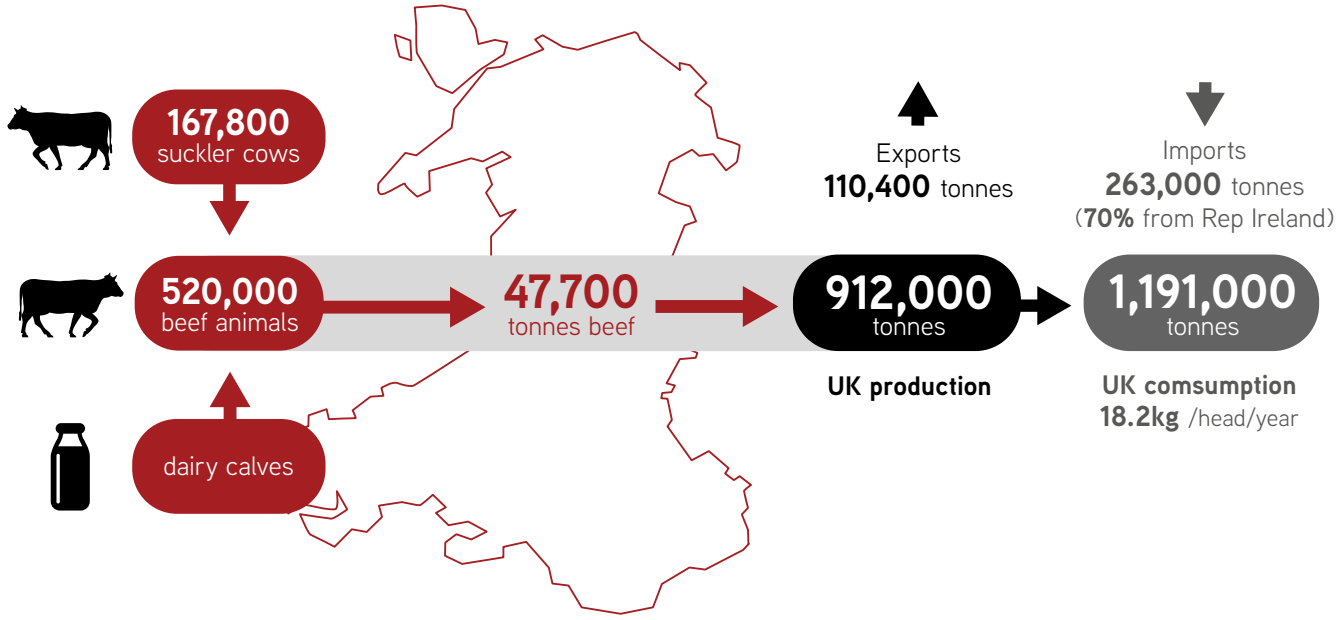
259. In terms of exports, the UK exported just over 105,000 tonnes of fresh/frozen beef and veal in 2017 (and 35,000 tonnes of processed meat), worth £410m to the UK economy. 33% of these exports went to Ireland, 23% to Holland, and 8% to France. In total, over 90% of UK beef exports go to other EU countries.

[40] Forecast figures

260. In Wales, there are 167,828 suckler cows on 7,435 Welsh holdings. There are in addition 520,000 other beef cattle on Welsh farms, these are finishing beef animals from the suckler and dairy herds. There are relatively few Welsh farms with just beef cattle; these farms will also have a dairy herd or sheep flock. Cattle in Wales account for 26%[41] of the value of Welsh agricultural output.

261. The trade flow for beef from Welsh farms is shown in Figure 5.1.

Figure 5.1: Trade flow for beef from Welsh farms



Source: AHDB

5.2 Lamb

262. UK demand for lamb and sheep meat has been declining over recent years, from 345,000t in 2009 to 300,000t in 2017. There has been a decline of 42,000t in lamb imports in the same period, and a small decline (5,000t) in exports from the UK.

263. It is important to note that the lamb trade (both imports and exports) occurs throughout the year, and exports are essential to the sector as it has the ability to mitigate seasonality and carcass balance issues. In terms of the latter, carcass balance issues arise because over 40% of the lamb purchased in GB[42] are leg roasting joints but the leg accounts for only 20% of the carcass.

This potential carcass imbalance problem is one of the biggest issues concerning the loss of the EU export market as other member states have a preference for the loin and shoulder, complementing UK consumer demand.

264. In terms of lamb exports, the UK exported just over 94,000 tonnes of fresh/frozen sheep meat in 2017, worth £385m to the UK economy. 45% of these exports went to France, and 15% to Germany. In total, 96% of exports are still to the EU-27 (France, Germany, Ireland, Belgium and Italy are most important). These established export destinations allow easy and free access to a large market and consequently improve market return.

[41] The value of milk products is separate to this.
[42] Figures for 2016.

265. In the same year, the UK imported 94,000 tonnes of sheep meat, of which 65% was from New Zealand, 14% from Australia, and 12% from Ireland. Imported lamb covers the period when UK lamb is in short supply. Keeping a quality product available for 12 months of the year is important for securing consumer loyalty to lamb.

Table 5.2: Lamb and mutton balance sheet, UK, 2009–2017, '000 tonnes

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Production	307	277	289	276	290	298	302	290	299
Imports[(a)]	137	121	104	100	116	108	110	109	95
Exports	99	92	101	99	109	108	83	82	94
Total consumption	345	306	293	277	296	298	328	317	300

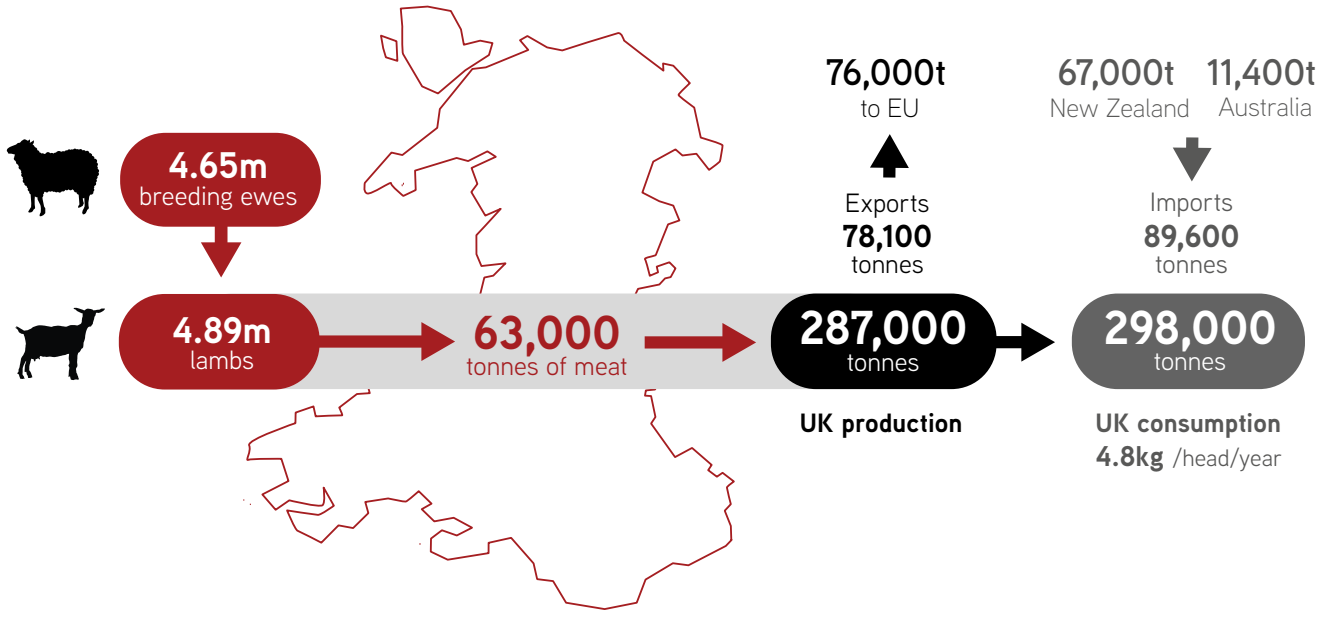
(a) Imports include fresh/frozen sheep meat and processed sheep meat.

Source: AHDB (figures rounded to nearest whole number)

266. Wales has 4.65m breeding ewes (28% of the UK breeding flock), with 4.89m lambs on 14,023 holdings. Wales consumes 5% of Welsh lamb production with the rest of the UK consuming 55-60%. Between 35-40% of Welsh lamb is exported. Welsh Lamb has PGI status and is a well recognised brand on UK and global markets.

The value of exports from Wales has grown considerably from £57 million in 2004 to £124 million in 2017. 95% of the sheep meat exports are shipped to markets within the EU, the remainder is exported to middle and far eastern markets. Sheep account for 17% of the value of Welsh agricultural output. The trade flow for lamb from Welsh farms is shown in Figure 5.2.

Figure 5.2: Trade flow for lamb from Welsh farms



Source: AHDB

5.3 Dairy

267. The UK milk market was 14.9 billion litres in 2015, up from 13.3 billion litres in 2012. Milk for liquid consumption accounted for 6.9 billion litres, and 7.4 billion litres was used in manufacture.

The following table shows the relative stability of the volume of milk used in the UK for liquid consumption in the period 2012-2015, but an increase in milk used for manufacture.

Table 5.3: UK Milk Flow 2012 – 2015, million litres[(a)]

	2012	2013	2014	2015
Total cows milk production available for human consumption	13,345	13,431	14,534	14,885
Raw milk imports	129	132	139	185
Total available for human consumption	13,474	13,563	14,673	16,069
Raw milk exports	466	473	486	586
Delivered to dairies	12,861	12,952	14,055	14,352
For liquid consumption	6,845	6,885	7,051	6,865
Used in manufacture	6,089	6,223	7,018	7,419

(a) Totals will not add as they exclude minor categories of milk fed to stock on farm; milk consumed on farm; and dairy wastage and stock change.

Source: AHDB

268. The UK is a net importer of dairy[43] but export is important. Exports amount to £1.31 billion. The UK annually 'exports' more than €1 billion worth of dairy products to other EU Member States. The EU is by far the main market for UK dairy products (72% dairy exports). The UK market for dairy products grows at about 2% per annum, this coupled with a growing global population and demand from increasingly affluent emerging markets, it is possible the UK sector could substitute imports and grow exports.

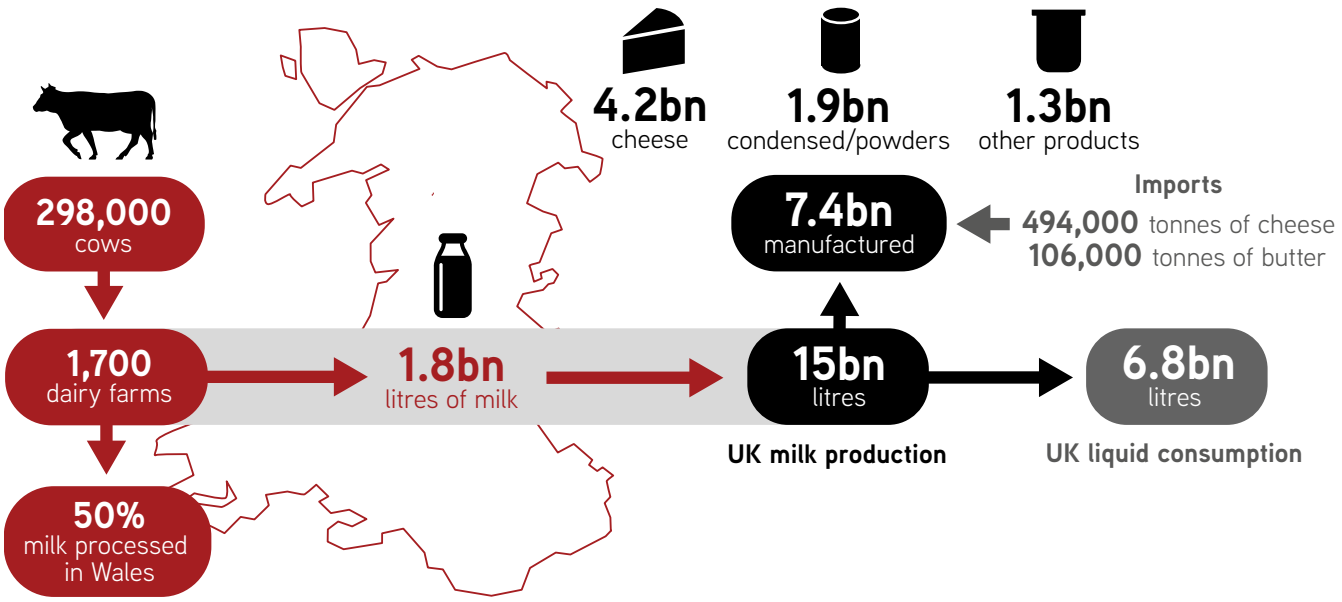
269. Overall the UK is 75% self-sufficient in dairy with imports of commodity cheese and butter, but also premium high value processed products. UK imports of dairy amount to £2.51 billion. The EU-27 are an almost exclusive supplier of the UK's dairy imports (98%).

[43] Includes processed milk.

270. The dairy sector in Wales produces 1.8 billion litres of milk from 298,100 dairy cows on 1,700 dairy farms. Milk contributes 31% of total Welsh agricultural output. There has been significant restructuring in the last 20 years, the number of dairy farms has halved but the Welsh dairy herd has expanded such that average herd size has doubled. The trade flow for milk from Welsh farms is shown in Figure 5.3.

271. Milk processing capacity in Wales is limited; about 50% of Welsh milk is exported to England with 50% processed in Wales, mainly into cheese.

Figure 5.3: Trade flow for milk from Welsh farms



Source: AHDB

References

Chapter 1

Census of Population (2011).

Defra (2018) Total factor productivity of the UK agriculture industry, second estimate for 2017.

Defra (2018) Agriculture in the United Kingdom, 2017.

European Commission (2016) Productivity in EU Agriculture.

European Commission (2017) CAP context indicators 2014-2020 no. 27: Total factor productivity.

Office for National Statistics (2018) Regional gross value added (GVA) and sub-regional gross value added, 2017.

Office for National Statistics (2018) Workforce Jobs by Industry and Region.

Scottish Government (2018) Agriculture Facts and Figures, 2017.

Scottish Government (2018) Total Income from Farming Estimates for Scotland 2015-17.

Scottish Government (2019) Total Income from Farming Estimates for Scotland 2016-18.

Welsh Economy Research Unit (2010), Input Output tables for Wales 2007, Cardiff University.

Welsh Economy Research Unit (2011) The Economic Impact of Walking and Hill Walking in Wales.

Welsh Government. Farm Business Survey (various years).

Welsh Government (2012) Wales Visitor Survey 2011.

Welsh Government (2018), Welsh Agricultural Survey, 2016.

Welsh Government (2018), Welsh Agricultural Statistics, 2016.

Welsh Government (2018) Wales Visitor Survey 2016.

Welsh Government (2018) Aggregate agricultural output and income, 2017.

Welsh Government (2018) Workplace employment by Welsh local areas and broad industry, 2017.

Welsh Government (2019), Economic appraisal of the Welsh food and drink sector – update, 2018.

Chapter 2

Defra, Scottish Government, Department of Agriculture, Environment and Rural Affairs Northern Ireland and Welsh Government (2019) Air Quality: Consultation on draft National Air Pollution Control Programme.

Hayhow D B, Burns F, Eaton M A, Bacon L, Al-Fulaij N, Bladwell S, Brookman E, Byrne J, Cheesman C, Davies D, De Massimi S,Elding C, Hobson R, Jones J, Lucas SR, Lynch S, Morgan L, Rowe A, Sharp R, Smith RG, Stevenson K, Stretton TA, Taylor R and Gregory RD (2016) State of Nature 2016: Wales. The State of Nature partnership.

Natural Resources Wales (2016) State of Natural Resources Report (SoNaRR): Assessment of the Sustainable Management of Natural Resources. Technical Report.

Office for National Statistics (2017) UK Natural Capital: ecosystem accounts for freshwater, farmland and woodland.

Vanbergen AJ, Heard MS , Breeze T, Potts, SG, and Hanley N (2014), Status and value of pollinators and pollinator services, report to Defra.

Welsh Government (2015) Nature Recovery Action Plan.

Welsh Government (2015) Water Strategy for Wales.

Welsh Government (2018) Welsh Agricultural Statistics, 2016.

Welsh Government (2019) Prosperity for All. A Low Carbon Wales.

Chapter 3

Defra (2005) Agricultural Management of Common Land in England & Wales.

Defra (2018) Agriculture in the United Kingdom, 2017.

Defra (2014) Farm Household Income and Household Composition: Results from the Farm Business Survey, England.

European Commission (2008) Other gainful activities: pluriactivity and farm diversification in EU-27.

Langton, S. (2012), Grazing Livestock Farms: Economic Performance and Links With Environmental Performance. Pub: Defra Agricultural Change and Environment Observatory Research Report No. 30.

Royal Institution of Chartered Surveyors Rural Land Market Survey H1 2018: Rent Prices in 2017-18.

Rural Payments Wales.

The Anderson Centre for AHDB (2018). The Characteristics of High Performing Farms in the UK.

Welsh Government. Farm Business Survey (various years).

Welsh Government (2018) Welsh Agricultural Statistics, 2016.

Chapter 4

Defra (2018) Agriculture in the United Kingdom, 2017.

Evidence and Scenarios Roundtable sub-working group (2018). Summary of EU Exit Scenario Planning Workshops.

European Parliament (2015) Implementation of the First Pillar of the CAP 2014-2020 in the EU Member States.

European Commission (2016) Redistributive Payment.

Welsh Government. Farm Business Survey (various years).

Rural Payment Wales.

Welsh Government. Welsh Agricultural Survey (various years).

Welsh Government (2018) Brexit and our land: Securing the future of Welsh farming.

Chapter 5

Agriculture and Horticulture Development Board (AHDB), UK Cattle Yearbook, various years.

Agriculture and Horticulture Development Board (AHDB), Dairy Statistics, An Insider's Guide, various years.

Agriculture and Horticulture Development Board (AHDB), Sheep Yearbook, various years.

Hybu Cig Cymru (2018) Little Book of Meat Facts. Compendium of Welsh red meat and livestock industry statistics.

Agricultural and Horticultural Development Board (2017) Meat and dairy – our prospects in the global marketplace.

Agricultural and Horticultural Development Board (2018) Exploring the implications of Brexit for agriculture and horticulture in Wales.

Agricultural and Horticultural Development Board (2019) Brexit prospects for UK Dairy Trade.

Welsh Government (2018), Farming Facts and Figures, Wales 2018.