

Assessing the impact of Agricultural Transition in Cornwall & the Isles of Scilly, Devon, Dorset and Somerset: Research to inform future planning

STAGE 2 FINAL REPORT

Great South West



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Chris Short

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Research Team

Chris Short, Rob Berry,
Theo Lenormand, Sofia
Raseta, Janet Dwyer

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Countryside and Community Research Institute

University of Gloucestershire
Francis Close Hall Campus
Swindon Road
Cheltenham
GL50 4AZ
ccri.ac.uk

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Executive Summary

Background and approach

The Great South West partnership commissioned CCRI to identify the impacts of the Agricultural Transition on farmers and land managers in Devon, Somerset, Dorset and Cornwall & the Isles of Scilly (IoS), in order to assess the impacts and opportunities this might present to a wide range of stakeholders and policy makers. In England 85% of former Common Agricultural Policy (CAP) support was devoted to direct payments under the 'first pillar', most of which was the Basic Payment Scheme. The remaining money was under the 'second pillar' to cover agri-environment schemes, LEADER local action and farm productivity support.

This project determines the impact of BPS reductions and the subsequent offers under ELM to the counties and districts across the Great South West on a yearly basis and over a ten-year timescale, 2020-2030. This process involved using the R programming language to determine the relevant postcode areas and the correct allocation in each county and district. R is an open source programming language and software environment for statistical computing and graphics.

Impact of losing BPS

Using the CORINE land cover data it is possible to calculate the area of agricultural land across the South West and attribute this to the corresponding postcode district. The result means we are able to estimate the reductions across the South West and break this down by the four counties. The total amount coming in each year from BPS up to 2020 was as follows:

- Cornwall and the IoS £51.6M
- Devon £99.2M
- Dorset £38.3M
- Somerset £53.3M
- **South West total £242.4M**

The IoS received £142,448 of the Cornwall total of £51.6M. Devon has 10 district authorities of which seven have substantial rural areas and three are essentially urban (each with BPS payments totalling less than £300,000 in 2020). The other seven areas receive payments of between £18M in North Devon to £8M in Teignbridge. The two National Parks in the South West, Dartmoor and Exmoor each received around £10M from BPS in 2020: Dartmoor £11.2M and Exmoor £8.7M, giving a total of £19.9M in 2020. This will reduce to £1.5M in Dartmoor and £1.2M in Exmoor in 2027, a total of £2.7M.

By adding the amounts deducted each year we are able to calculate the total amount being taken from the BPS between 2021 and 2027. **Over the transition period the total BPS amount lost from the rural economy of the Great South West area will be £883.7M by the end of 2027.**

Most farms in the GSW area belong to the small or intermediate farm category (under 50ha), this is true for each county area studied. Farms in Cornwall, Somerset and Devon tend to have more 'small', 'very small' and 'intermediate' farms when compared to Dorset or England as a whole. Dorset has a significant share of large farms, even compared to England as a whole. Cornwall and the IoS has a significant share of 'small' and 'very small' compared to England as a whole.

Output, trends and ELM

Using the CORINE data set we can establish the land areas over which BPS would apply, accepting that the categories are broad. The two dominant categories in all four counties are 'arable land' and 'permanent pasture' and are used to ascertain the future productive outputs. Moors and heathlands are present in Cornwall and Devon to a larger extent than in Dorset and Somerset. The Great South West area is important for British farming, with 13.5% of England's agricultural land and 18.5% of farm holdings.

Farming in the South-West is still predominantly a family business of a relatively moderate size compared to England, this is partly due to a focus on labour-intensive livestock farming. This is particularly important for the loss of BPS, as smaller farms with higher labour costs will be hit harder by a reduction in income as BPS makes up a higher proportion of that income. The higher presence of family farms might mitigate this a little, because family members can perhaps absorb reductions more easily. However, the financial impact will be harder in the livestock sector because support payments make up a large proportion of net farm income for such farms.

Analysis of 10 years' data on farm structural change was hampered by changes in categories and other alterations to the dataset but it is clear that GSW is largely pastoral and livestock-oriented, with smaller farms than the national average. Since smaller farms are more vulnerable than larger farms to future changes as a result of being more dependent on current support measures, they may see fewer opportunities to benefit from change during a transition period. The likely trend will be towards increases in farm size as the overall number of farms and farmers reduces.

The take up and utilisation of on-farm business advice to support the transition would appear crucial for farmers and land managers but on current evidence, it seems that many in the South West area will not be accessing this, connected to a whole range of factors. We suggest there is an urgent need to devote more effort to increase levels of engagement with professional, environmentally-informed and future-focused business advice, among farm families across the GSW area. The Local Nature Partnership's current funded research into this aspect of the transition will be helpful in providing more evidence on this point.

There are 3 offers to farmers and land managers under ELM:

- **Sustainable Farming Incentive (SFI)** is aimed at being attractive to the majority of farmers with a target of 70% of farms in the scheme by 2028 (Defra 2022)
 - In March 2022 three standards were available:
 - the Arable and Horticultural Soils (A&HS) standard
 - the Improved Grassland Soils (IGS) standard
 - the Moorland and Rough Grazing (M&RG) standard (introductory level)

- **Local Nature Recovery** will be an ‘improved and more ambitious successor to the Countryside Stewardship scheme in England. (Defra 2022).
- **Landscape Recovery** ‘is for landowners and managers who want to take a more radical and large-scale approach to producing environmental and climate goods (Defra 2022).

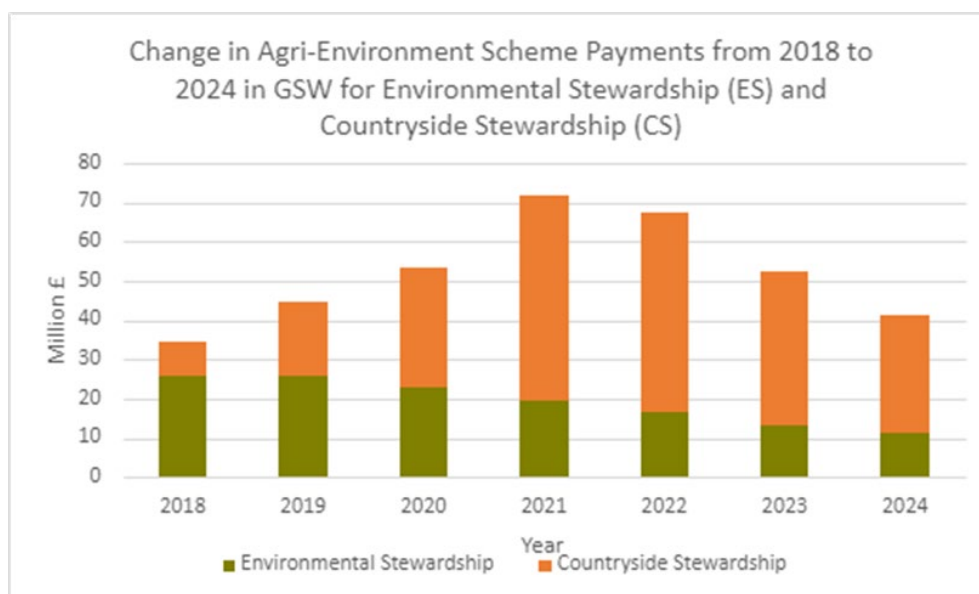
Current income into GSW from Agri-Environment Schemes

Currently across the GSW there are two agri-environment schemes (AES) in which farmers and land managers are involved: Environmental Stewardship (ES) and Countryside Stewardship (CS). Both will be replaced by ELMS in 2024 and the figures for both have been amalgamated here but are analysed separately in Section 3.1.

Across the whole of GSW the AES involvement is as follows:

- Cornwall and the IoS: 1,379 AES agreement holders undertake management for which they received £13.55M. This gives an average agreement value of £9,825
- Devon: 3,261 AES claimants in 2022 undertaking management for which they received £31.01M, an average of £9,509 per agreement.
- Dorset: 731 agreement holders undertaking management that received £9.18M, which is an average of £12,558 per agreement
- Somerset: 1,662 agreement holders undertaking management worth £13.88M, an average of £8,351.
- GSW: 7,033 agreement holders undertaking management that received £67.62M, which is an average of £9,615 per agreement.

There are some interesting comparisons when comparing the AES payments and BPS between the two national parks. Both receive about £5M a year, contrasting with the higher amount of BPS received by Dartmoor (£11.2M) compared to Exmoor (£8.7M). The other interesting point is that the AES makes up about a third of the total support payments coming into the national parks, because of the lower BPS rates for Severely Disadvantaged land.



Comparing AES across the GSW shows a steady increase in the total amount of payment coming into GSW area, notably through CS in 2021. Under CS, numbers of agreements increased from 2018 to 2021, with 2022 at similar level and might increase as agreements become 'live' later in the year. The lower levels for 2023 and 2024 are based on current agreement holders and not any new agreements starting in those years. The reductions in ES are as agreements end, but these might be rolled over until 2024.

Table: Comparison of number in AES and those claiming BPS (n of claimants)

County	Total AES	Claiming BPS	% not in AES
Cornwall and IoS	1379	3854	64
Devon	3261	7794	58
Dorset	731	1800	59
Somerset	1662	4277	61
GSW	7033	17725	60
England	34,313	83,889	59

The table shows that just over a third of eligible land managers in the GSW area are in AES. Devon has the highest proportion in AES with 42% and Cornwall the lowest at 36%. Due to a drop in funding for AES there was an expectation that participation would fall from a high of 70% in 2013 to around 35-40% in 2020, and National figures confirm the level in 2022 to be 40%. This suggests that there is scope in the GSW area, as across England, for more farms to enter into AES or ELMS agreements in response to the loss of BPS. The increases in CS applications across the GSW in 2021 suggest this is happening already. The ambition of 70% of eligible land managers being involved in schemes is also the stated ambition for the SFI scheme.

Estimating the new opportunities under ELM

The new opportunities under ELMs have been reviewed and assessed in order to determine how the adjustment from BPS to SFI might play out. What is clear is that soils will be treated differently under ELMS than they have been in BPS and AES: the main change is that positive changes in soil management will be eligible for funding. Assuming all arable and horticulture areas in the GSW area are eligible for the A&HS standard and the stated government target of 70% is met, this could amount to over £9M per annum in the GSW area by 2028. For the IGS standard the total is over £13M. Adding the M&RG standard the total is over £22.5M. If half the area in A&HS and IGS is in the intermediate tier, the total rises to £33.7M. Nevertheless, **this ELM funding represents only 14% of the £242M that came into the GSW area through BPS in 2020.** Even if all land went into the intermediate tier, the amount would be less than 20% of current annual BPS income to GSW farms.

Given the wide range of permutations, it would seem sensible to outline a range of outcomes for the period 2024-28 across the 3 standards (A&HS, IGS and M&RG).

- **Low SFI outcome** (only 50% take-up by 2028)

- Assuming even take-up at introductory standards = £31.5M by 2028
- **Medium SFI outcome** (meets Defra take-up target 70% by 2028)
 - Assuming even take-up to 70 and 50% at intermediate standard = £67.4M by 2028
- **High SFI take-up outcome** (meets Defra take-up target 70% before 2028)
 - Assuming quick take-up to 70 and 75% at intermediate standard = £96.75M by 2028.

There are many caveats to these figures as they are based only on the payment rates for the three standards currently available and have not included those standards that will become available in coming years. Nevertheless, the findings match the expectations of the commercial land agency sector, which anticipate that current rates of SFI will bring around **10-30% of the amount of former BPS payment returns** to farmers and land managers, depending on the selected level of ELM uptake (Strutt & Parker 2021).

The total annual budget for ELM in 2024 in England will be slightly smaller than that for BPS in 2020 (because the same money is also funding new productivity and other schemes, in parallel). A conservative estimate could be that the total payment from SFI to GSW farms might total around £100M once covering all the eligible SFI standards. The AHDB estimates that at the very best, a holding might be able to secure two-thirds of its previous BPS monies through take-up of the Advanced standards of the SFI (AHDB 2021). The SFI payments will also require 'actions' in order to be claimed, which will have some element of cost (e.g. time or materials) attached to them.

For increased AES and Local Nature Recovery (LNR) payments to fill this gap would be a major increase in the local ambition for AES. The £70M that came into GSW from AES in 2021 was in addition to the **£243M** from BPS which will be lost: LNR would need to increase not just the number of scheme claimants but also the total claimed, by a significant amount.

- If all eligible land managers in GSW were in AES, with an average payment of perhaps £10,000 per farm, this would generate a revenue of £177M to the GSW (about **£100M** more than AES alone, currently),
- If 70% of farms were involved it would only generate £124M – increasing the revenue by only **£50M**, compared to the current AES participation.

GSW farming trends over past 10 years or more

Undertaking a 20-year analysis of the official statistics reveals:

- a contraction in livestock farming activity, but an increase in per animal and per worker productivity, meaning fewer animals but similar or even higher output;
- Reduction in dairy of about half, with stable production levels and higher average yields;

Grassland for livestock production remains the dominant land use in both area and economically.

Implications and future options

When a farm business ceases to trade, more than the business is lost. Farming in the GSW is embedded in the wider rural and regional economy, connected to land agents and

business support, the ancillary industries and product value chains. The tourism sector is vital to GSW and depends on well-managed and accessible landscapes and a high-quality local food and drink offer. The many potential knock-on effects for the rural economy are hard to model and predict. Understanding how, as a very varied group of businesses, the farming sector will respond to the loss of BPS and the impact on rural and regional businesses as a whole is not easy.

The reason for highlighting the amount of BPS being lost to the GSW is not to suggest swapping this for a similar-sized replacement. The future of sustainable farming will not be built on the same old subsidy models. However, by sharing this information about significant economic losses and major change, the aim is to help a wider range of people and organisations to think proactively about mitigating the adverse impacts of BPS withdrawal on the farming community, business ecosystem, and the GSW countryside. If this amount of money flowing into the GSW area were concentrated in a single location then such a scale of loss would likely precipitate special measures and funds to mitigate its impact. With BPS, its loss is being felt by over 17,000 businesses spread across the landscape, each one with its own financial linkages to the wider rural economy.

It is crucial that these messages are shared and lead to positive action that embraces the whole of the rural economy and the contribution that farming makes to this. The types of changes that might occur are:

- significant impact on the landscape and environment of the county as farmers seek to replace the BPS in their business models – looking for new income sources, or opt to get out of farming, or are forced out by bankruptcy, leading to land sales or transfers;
- increases in enquiries concerning easements and planning issues as farmers consider their options;
- negative impact on the health of farmers and land managers: it is already recognised that this is a stressful job with a high instance of mental health issues;
- farmers may aim to apply their skills set outside farming, such as in engineering, transport and construction sectors;
- different farm businesses responding to the change in very different ways which may or may not sit well alongside other sectors: there is no single pathway to a more secure financial future.

The financial pressures are likely to increase in the period after 2024, meaning that preparatory actions need to be initiated now. Here we outline some suggestions, also encouraging appropriate stakeholders to come together and work collectively.

The findings of this report contain key messages for economic development officers across the GSW, planning authorities and parish councils, environmental NGOs, public health sector, local businesses, notably in the food and drink sector and rural communities across GSW.

It's easy to assume that withdrawing farming support will only impact unprofitable businesses but the figures in this report show that it will be much more widespread than that. When a farm business ceases to trade, more than the business is lost as there is a wider impact, like the ripples in the water when a stone hits, across the rural economy. Farming in the GSW is very much embedded in the wider regional economy, connected to the agricultural supply

sector, business and financial support services, the ancillary industries, and many businesses in food supply chains and the tourism sector. The many potential knock-on effects for rural economies and communities are hard to estimate with precision. Recent work by the South West Rural Productivity Commission (2017) highlighted the connections between the various sectors in the GSW rural economy¹, especially:

- agriculture, forestry & fishing, food & drink and tourism sectors are heavily interconnected
- improved connectivity and a high quality natural environment offer potential for businesses to grow and thrive
- agriculture, forestry & fishing make up about 25% of all rural businesses with a workforce of about 46,000.

Two key findings of the Rural Productivity Commission are to 'work collaboratively', form a 'broad coalition' to 'tackle head on the challenges facing farming, food& drink and tourism' by increasing engagement with, and the implementation of an action plan for, each sector. Using the findings of this report it is possible to make some of these connections a little more tangible:

- The Food and Drink Federation has over 1,100 members, employing almost 30,000 people and calculates that the sector was worth over £2billion to the SW economy in 2019 (FDA 2019).
- The link between farming and the food and drink sector is not direct, but it is estimated that 61% of UK food produced is consumed in the UK (SWRPC 2017b).
- The revenue coming into farming is at least partly spent in the rural economy - assuming that 25-50% of the £883M of BPS that is lost was previously spent on businesses supporting the farming sector the loss represents a hit of £220-440M lost in the next 5 years for feed merchants, machinery retailers, contractors, vets, solicitors and many others. This too will reduce their own spending power in the rural economy and so the impact of the agricultural transition goes on.
- The environmental economy is growing and is linked strongly to tourism in the GSW area - research in Dorset suggests the environmental economy is worth £0.9-2.5billion a year (between 5-15% of the county's economy), most of this is income from the managed landscape through farming. The loss of BPS represents a shock to the sector that manages this asset (SWRPC 2017b).

Developing and expanding existing and new initiatives that connect different elements of the agricultural sector with the wider rural economy is key to mitigate the environmental and economic impacts of these changes in the agricultural transition.

The role of organisations such as the LEP, Local Planning Authorities, County and Unitary Councils, the NFU and Local Nature Partnership are key, because these changes overlap a number of priority areas. Developing an integrated discussion to explore how these changes can be managed to benefit of the people, wildlife and economy of the GSW is the next step.

¹ The South West Rural Productivity Commission report covers the whole of the GSW area plus Wiltshire and Swindon.

There is a chance to seize the opportunities they create, in part by implementing some of the recommendations of the National Food Strategy by linking food production more closely with local food consumption, as well as picking up the recommendations of the South West Rural Productivity Commission. Biodiversity Net Gain and Carbon trading also represent potential alternative sources of income for some farmers wishing to diversify their portfolios to include more non-food related products and outcomes such as tree-planting. However, these incentives remain emergent and there is a need for a framework around them to ensure transparency and trust for both investor and provider.

The issue of equity is important, here noting that some farm businesses, especially in the livestock sector, are reluctant to seek advice and pay for it, therefore relying heavily on peers. As a result they are often overlooked by commercial advice providers. Such farms include small and/or marginal land managers (e.g. hill farmers); female land managers; young land managers or new entrants; farm employees and contractors; producer groups; and part-time land managers (Prager et al 2016). This report has found these types of farmer to be more prevalent in the GSW area than in England as a whole, suggesting that the 'reach' of commercial advice across farms in GSW may be more limited than elsewhere in England.

It is worth noting that over the 2020-2027 period covered by our analysis, farmers and land managers in Wales, Scotland and Northern Ireland will not face such rapid changes to support; while across the EU, the new CAP will continue to support farm incomes and additional funding has been offered to help address the current challenge of soaring input costs.

We suggest that key organisations across GSW use this report as a trigger to take a lead and develop an innovative and responsive system to provide support, guidance and a forum for a sustainable and just transition, aiming to provide long-term value for money and increase the future resilience of the whole GSW economy.

1. Introduction

1.1 Introduction

This report outlines the analysis undertaken by the CCRI on the impact of the reductions and loss of the Basic Payment Scheme in 2028 in Cornwall and the and the IoS, Devon, Dorset and Somerset. Defra announced at the end of 2020 that there would be a phasing out of the Basic Payment Scheme (BPS) starting in 2021 with final payments in 2027. This was set out in the Agricultural Transition Plan, published in November 2020 after the UK left the European Union (Defra 2020).

Agriculture, which includes primary food and non-food production and land management, accounts for about 80 per cent of land use in the Great South West but farming has far wider influence on life in the region. The food and farming sector as a whole is critical to the employment, economy, environment, tourism and social fabric of the area: the food economy in the Great South West alone is worth over £5 billion and represents about 7% of overall GVA in the region. As Figure 1 shows the Great South West area, consisting of Cornwall and the and the IoS, Devon, Dorset and Somerset, has pockets of Grade 1 and 2 land mainly in the east and coasts. Grade 4 and 5 land tends form a central block. Across Enlanf grade 4 and 5 land is focused on western areas in the South and North. The GSW area, notably in the west, has some climatic advantages that make lower grade land more productive.

Agricultural Lands Classification of the South-West of England (Defra)

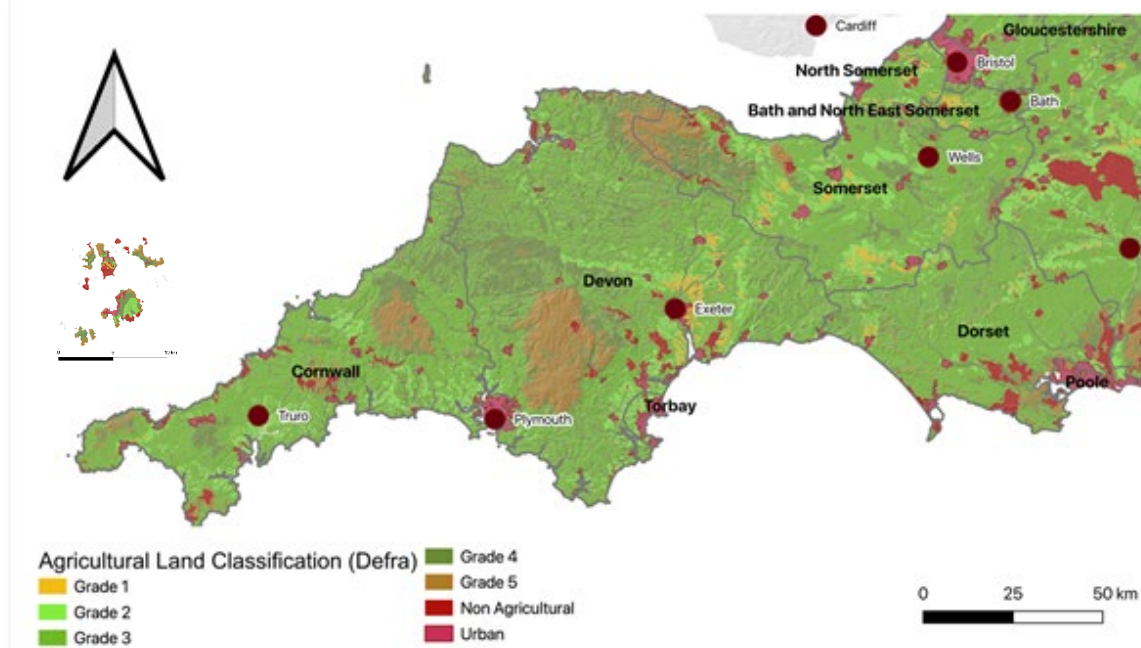


Figure 1 Agricultural Land Classification in Great South West (Defra MAGIC 2021)

The three LEPs (Heart of the South West, Dorset and Cornwall & the and the IoS) work together as part of a major economic region - with a population of over 3 million, an economy of £64.4 billion and almost 128,000 businesses. It is also a vast region - over 17,000 square kilometres - predominantly rural, with a few medium-sized cities and several large towns. Food, farming and hospitality are vital industries, and the region also hosts many other key sectors.

The Great South West partnership commissioned CCRI to identify the impacts of the Agricultural Transition on farmers and land managers in Devon, Somerset, Dorset and Cornwall & the and the IoS, in order to assess the impacts and opportunities this might present to a wide range of stakeholders and policy makers.

1.2 Background

In the United Kingdom as a whole, the majority of former Common Agricultural Policy (CAP) support was devoted to direct payments under the 'first pillar' as shown in Table 1 for England. These represented 85% of CAP support to UK farms, focused on farm income support.

Table 1: Direct payments to farmers in England in 2020

Decoupled payments (not linked to production)	£ Million
1st Pillar Basic Payment Scheme (including Greening Payment of 30%)	1 823
2nd Pillar Agri-environment schemes	317
Environmental Stewardship Scheme	164
Countryside Stewardship Scheme	136
Organic	5
Advisory services, farm management and farm relief services	5
Other - Covid-19 support/recovery, flooding fund	7
Animal disease compensation	12
Total decoupled payments	2,152
Total direct payments	2,152

(Source Defra 2021)

Pillar 1 of the CAP also included market regulations and sector supports, and was originally designed to achieve the goals listed in Insert 1.

Insert 1: Objectives of the first pillar of the CAP: Article 39 of the European Union Treaty

- To increase agricultural productivity by promoting technical progress and ensuring the optimum use of the factors of production, in particular labour.
- To ensure a fair standard of living for farmers.
- To stabilise markets.
- To ensure the availability of supplies.
- To ensure reasonable prices for consumers.

In the UK, following a period of reform of the EU CAP market regimes through the 1990s, the most prominent feature of Pillar 1 was direct payment supports, decoupled from production. This payment system was first termed the Single Farm Payment (SFP), and after 2014, the Basic Payment Scheme or BPS. This is a direct payment to farms based on the amount of land over which they had management control, and subject to basic conditions of compliance which involved upholding Statutory Management Requirements (SMR) (reinforcing environmental, health and safety regulations on farms) and Good Agricultural and Environmental Conditions (GAEC), which is a set of further 'good practices' for environmental protection.

Since the introduction of the SFP in 2003, in England payments were gradually shifted away from a link to historic production patterns on each farm and towards a flat-rate area payment system, which was finally completed in 2012. This means from 2012 on, a standard payment per hectare was offered to farmers² that did not depend on the type of production or output of the farm. Nevertheless, Defra chose to differentiate this payment depending on the productive capability of the land, using the Severely Disadvantaged Area (SDA) classification and the moorland line to denote the most marginal land, on which lower payments per hectare were made. Within the Great South West area this means that only the major upland areas of Bodmin, Dartmoor and Exmoor have land qualifying for the much lower Moorland SDA payments, as indicated by the three larger Brown areas in Figure 1. Most SDA in England lies to the west and north, covering areas such as Cumbria, North Yorkshire and Northumbria. At the same time, payment levels varied from year to year as the BPS budget was fixed in Euros and had to be converted into a sterling equivalent which fluctuated with the changing exchange rate on currency markets. Immediately after the Brexit agreement passed through parliament in January 2020, Defra transposed the CAP payment system into UK legislation, but since then it has made minor modifications to some of the conditions of GAEC and BPS operation and eligibility.

In 2020, BPS payment rates were the following:

Table 2: Basic Payment Scheme Rates 2020 - England

	£/ha		
Region	Non-SDA	SDA-Other	Moorland SDA
Total BPS	233	232	64

² [1] The payment can go to a wide range of organisations since the slightly restrictive active farmer checks were lifted by the Rural Payment Agency in 2018 but the minimum 5ha of eligible area remains.

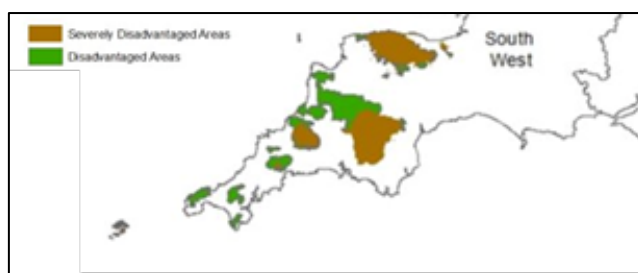


Figure 1: Map of Severely Disadvantaged Areas in the South-West (Iversen, 2020)

The UK pioneered the use of Agri-Environment Schemes (AES) in the late 1980s, compensating farmers for adopting environmentally friendly management on their land. Within the CAP these schemes were part of Pillar 2 support and this part of the policy – the Rural Development Programme for England (RDPE) - was co-funded by the UK treasury. The EU objectives for RDPs 2014-2020 were to ensure viable food production and the sustainable management of natural resources including climate action, and to achieve balanced territorial development of rural economies and communities including the creation and maintenance of employment.

The balance of funding between Pillar 1 and Pillar 2 is not equal across or even within Member States, even taking into account the co-financing of pillar 2 schemes with UK money, and the use of ‘modulation’³ since 2001 to boost Pillar 2 funds by transferring some across from Pillar 1. Pillar 2 funding in England includes both annual payments in the agri-environment schemes, and capital funding for farm and food sector investments, diversification, rural enterprise and innovation which was distributed under the Rural Development Programme for England (RDPE). For all annual payments made under the CAP (direct payments in BPS and agri-environment schemes only), the figures in 2020 are shown in Table 2 below: 85% of the payments come from Pillar 1 and only 15% from Pillar 2 AES. Pillar 2 is likely to be a slightly higher share in the South West due to relatively higher levels of land of high environmental value and lower agricultural potential (more SDA and moorland) compared to some other parts of the country. However, the importance of the BPS as the dominant CAP influence is clear while the move towards ‘public money for public goods’ as the basis underpinning ELM development might offer an opportunity for the South West.

Figure 2 shows the uptake of land into AES over time from 1992 until 2020. First, the growth is clear but also a shift from introduction prior to 1992 with mainly targeted schemes such as the Environmentally Sensitive Areas (ESAs) that applied to Dartmoor, Exmoor and the Penwith Moors in West Cornwall in the SW, into the much broader ES schemes after 2005, which closed in 2015 and were again replaced with a more targeted approach in the new Countryside Stewardship scheme. The peak of uptake was in 2013 when AES covered about 70% of all farms and 8 million hectares. The area under AES has declined to about half that amount by 2020, notably through the ending of the entry-level Environmental Stewardship schemes (ELS), which included Organic ELS and Upland ELS.

³ Modulation is the term used to describe the partial transfer of support from the Pillar 1 (support to agriculture) to the Pillar 2 (support to other rural activities) of the CAP.

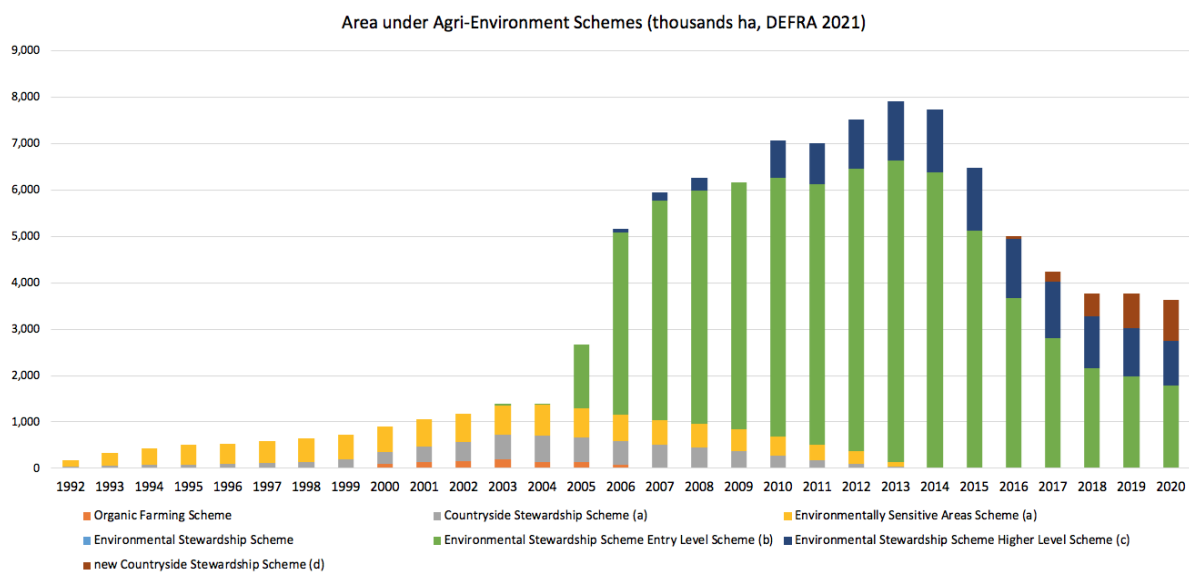


Figure 2: Area under AES agreements in England by year (adapted from Defra, 2021)

1.3 Project outline

This project determines the impact of BPS reductions and the subsequent offers under ELM to the counties and districts across the Great South West on a yearly basis and over the ten-year timescale. The findings will be useful to:

- Inform county and district authorities of the impact in their area and on local farm businesses;
- Update the agricultural industry itself regarding the changes that are happening now;
- Calculate how local farmers and landowners are impacted in terms of the speed of the decline in BPS payments;
- Assess how these payments are spread over the SW counties; and
- Consider the different pathways that those in the industry might take to manage or replace the financial losses they will experience for the next 4-5 years.

The opportunities of existing AES, and new opportunities available under the Environmental Land Management (ELM) programme, such as the Sustainable Farming Incentive (SFI), will be calculated in order to assess the current situation and the potential for change as new offers arise.

The research was undertaken in two stages, the Stage 1 report covered the identification of the current BPS payments in the South West, associated analysis and an initial assessment of the opportunity presented by the transition to schemes available under the ELM programme, such as the SFI component (Short et al 2022a).

The Stage 2 report examines in more detail the potential impact of these changes on rural businesses, the current and projected influence of agri-environment schemes and the potential of future schemes under ELM to assist with the transition away from flat rate

support. The final sections assess the farm-level changes across the GSW area that are likely to take place and how the sector can be best enabled to increase its resilience and enhance its productivity.

1.4 Project approach

The CCRI used as a starting point the work undertaken in Gloucestershire (Short et al 2020) where an annual deficit to the area of £40million per year from the loss of BPS was estimated. For this report focused on the South West, we used the same Defra CAP payments site www.cap-payment.gov.uk in order to identify the overall BPS payments and the breakdown according to the sliding criteria identified by Defra in the Agricultural Transition Plan (2020) (see Table 3).

This process involved using the R programming language to determine the relevant postcode areas and the correct allocation in each county and district. R is an open source programming language and software environment for statistical computing and graphics. As a result of being open source, R is now widely used by data scientists and statisticians across the world to analyse large data sets and data mining through specially developed programs. The full methodology, including the R programming code and description of datasets used in the analysis is available here: <https://robertberryuk.github.io/GSWP/analysis.html>

Using the table below the gradual reductions arising from reductions in BPS between 2021-2027 could be calculated and allocated accordingly.

Table 3: Direct Payment (BPS) reductions, adapted from Agricultural Transition Plan (Defra 2020), including estimates for 2025-2028.

Year Payment Band	2018-2020	2021	2022	2023	2024	Est. for 2025	Est. for 2026	Est. for 2027	Est. for 2028
<=£30,000	0%	5%	20%	35%	50%	60%	75%	85%	100%
£30,000 to £50,000	0%	10%	25%	40%	55%	65%	75%	85%	100%
£50,000 to £150,000	0%	20%	35%	50%	65%	75%	85%	90%	100%
>£150,000	0%	25%	40%	55%	70%	80%	85%	90%	100%

(sources Defra 2020 & Short et al 2020)

The first part of the process is importing and selecting the correct CAP payments data according to the appropriate areas for this project. This involved linking different tables and removing duplicates and eliminating any entries where data is not available. Finally the relevant columns for BPS are selected. For England as a whole there are 88,443 records.

The following geospatial datasets are used for this analysis:

- County boundaries - (OS BoundaryLine)
- Postcode district areas - (OpenDoor Postcode Districts)
- Land Cover data - (Corine 2018).

The CAP Payments dataset reports payments at postcode district level, but postcode districts do not conform to administrative boundaries (e.g. counties, district unitary authorities). Our approach is to calculate the area of agricultural land (using Corine land cover data) within each postcode district, and to use this to calculate the P1 payments. For districts which straddle county boundaries, the area of agricultural land both inside and outside of the target county are calculated, and the P1 payments are calculated based on the proportion of agricultural land inside the boundary. Agricultural land cover classes were extracted from the Corine 2018 land cover dataset and used for the agricultural area calculations.

From this point the sequence of actions is as follows:

- Select the four target counties from the GB county⁴ data layer;
- Initiate a programming loop based on the counties ensuring that the same code block is run for each county in turn;
- Create a spatial layer of postcode districts that spatially intersect with the “active” county;
- Create a spatial layer of postcode districts clipped to the geographical extent of the “active” county;
- Step 5: Create a spatial layer of postcode districts clipped exactly to the extent of the “active” county
- Using the Corine data on agricultural land area, calculate the agricultural land area totals for intersected postcode district polygons, and clipped postcode district polygons respectively. This gives us two values: 1) the total area of agricultural land in each postcode district, and; 2) the area of agricultural land in each postcode district that is within the active county;
- Using the agricultural land area proportions and the Pillar 1 reduction figures, calculate the “baseline” value for P1 in 2020 and following years with payments applied up to and including 2027.

The resulting figures are displayed and analysed in Chapter 2 and form the basis for subsequent analysis and interpretation.

⁴ For the purposes of this analysis Cornwall and the isles of Scilly have been treated as one area for statistical purposes

2. Calculating the impact of Agricultural transition in the South West

2.1 Identify the value of BPS in South West

Using the CORINE land cover data it is possible to calculate the area of agricultural land across the South West and attribute this to the corresponding postcode district. The result means we are able to estimate the reductions across the South West and break this down by the four counties. The total amount coming in each year from BPS up to 2020 was as follows:

- Cornwall and the IoS £51.6M
- Devon £99.2M
- Dorset £38.3M
- Somerset £53.3M
- **South West total £242.4M**

The next four figures show the reductions by county from 2020-27.

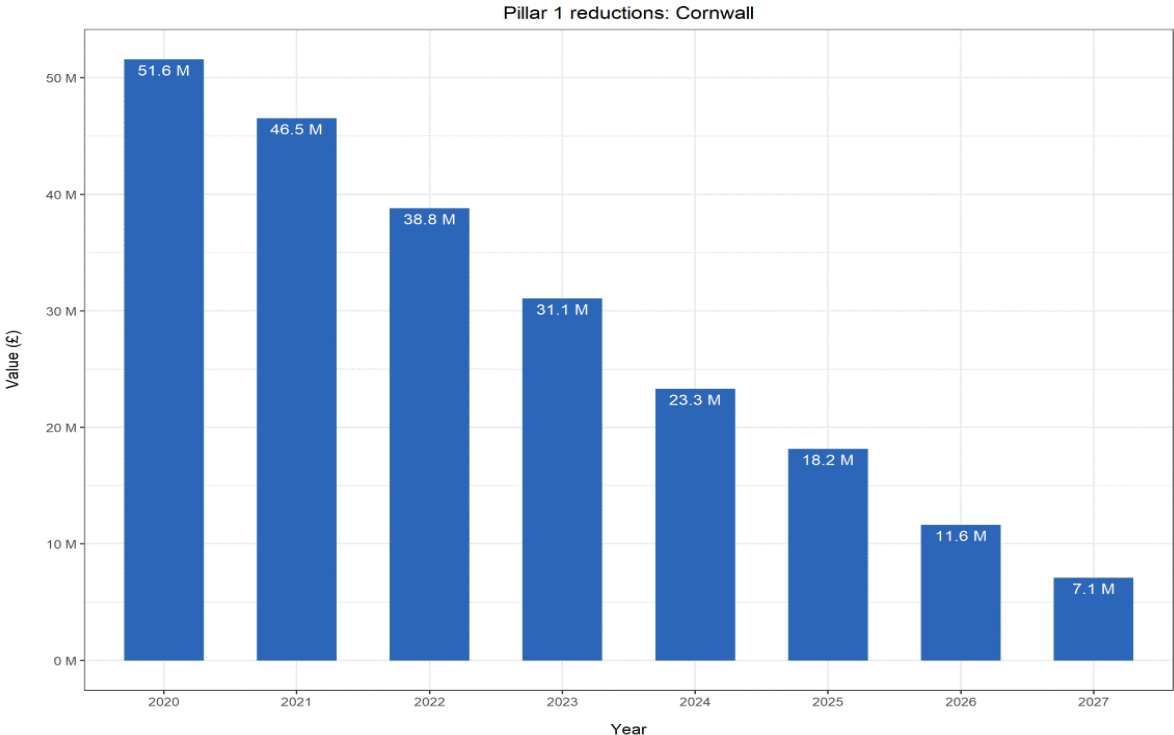
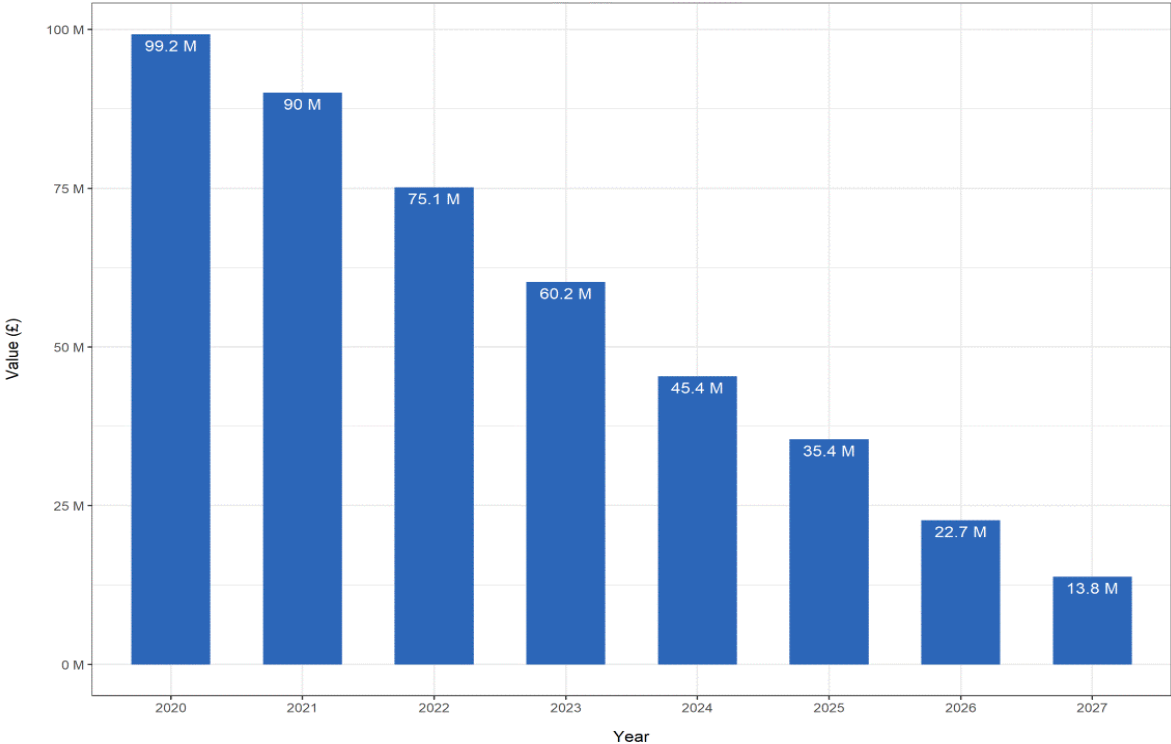
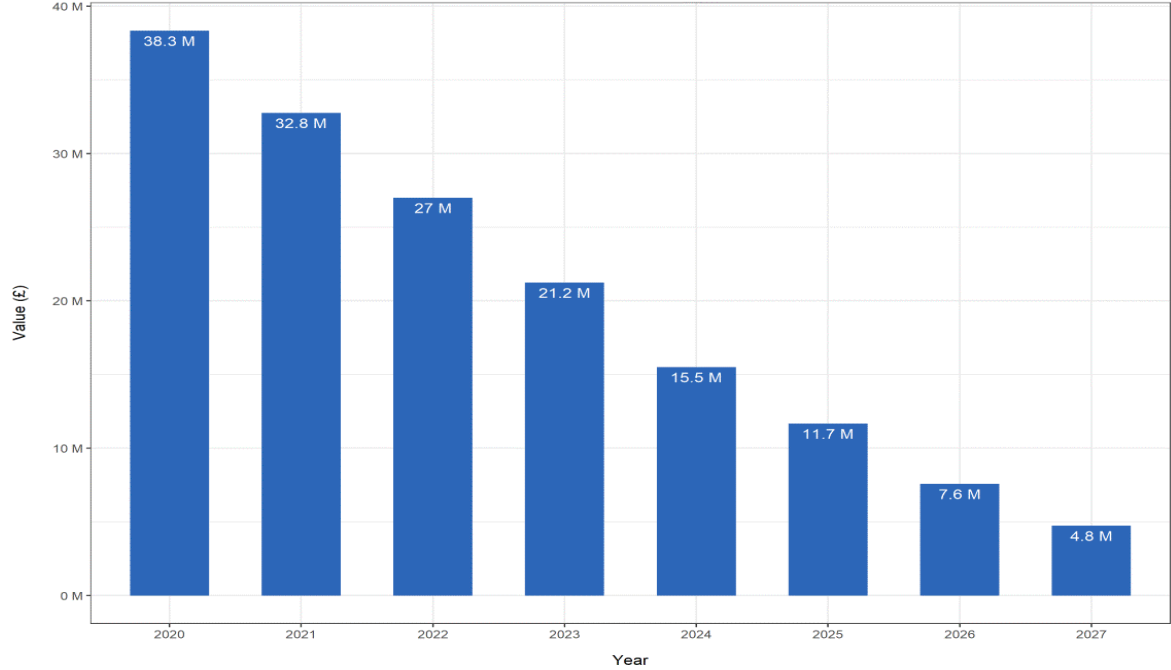


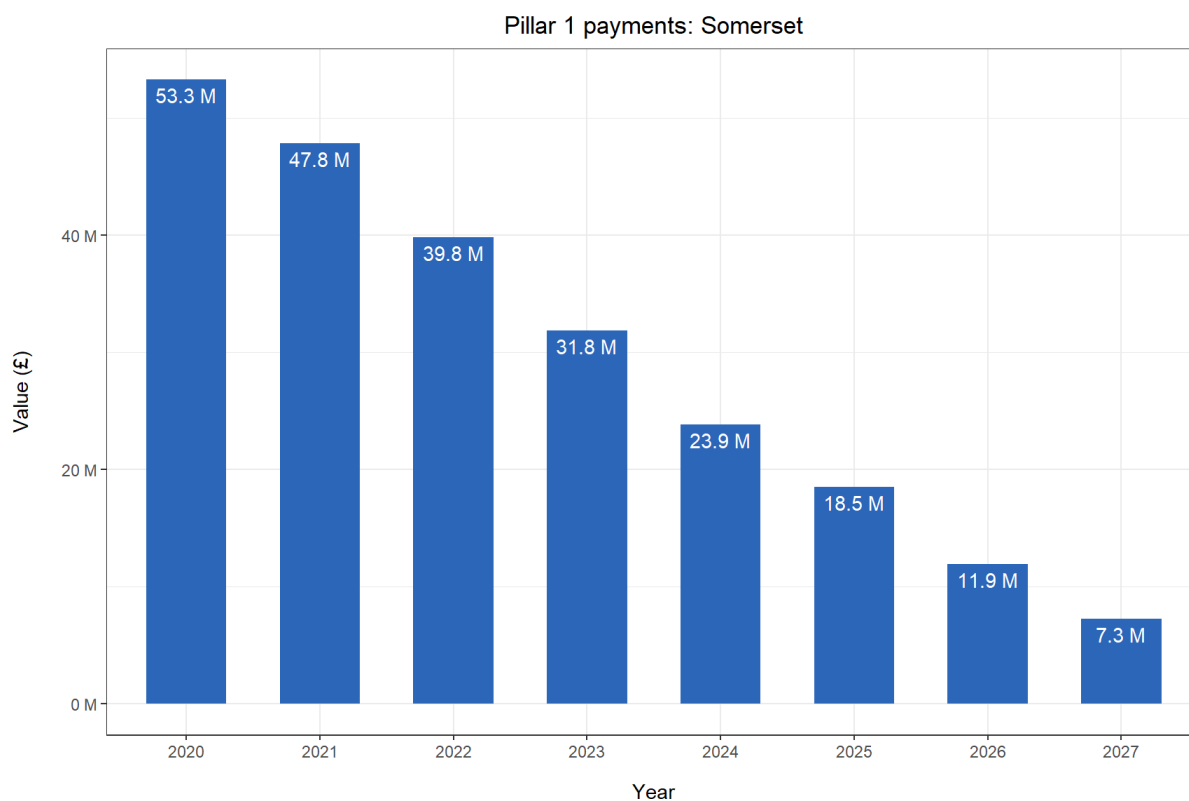
Figure includes IoS

Pillar 1 reductions: Devon



Pillar 1 reductions: Dorset





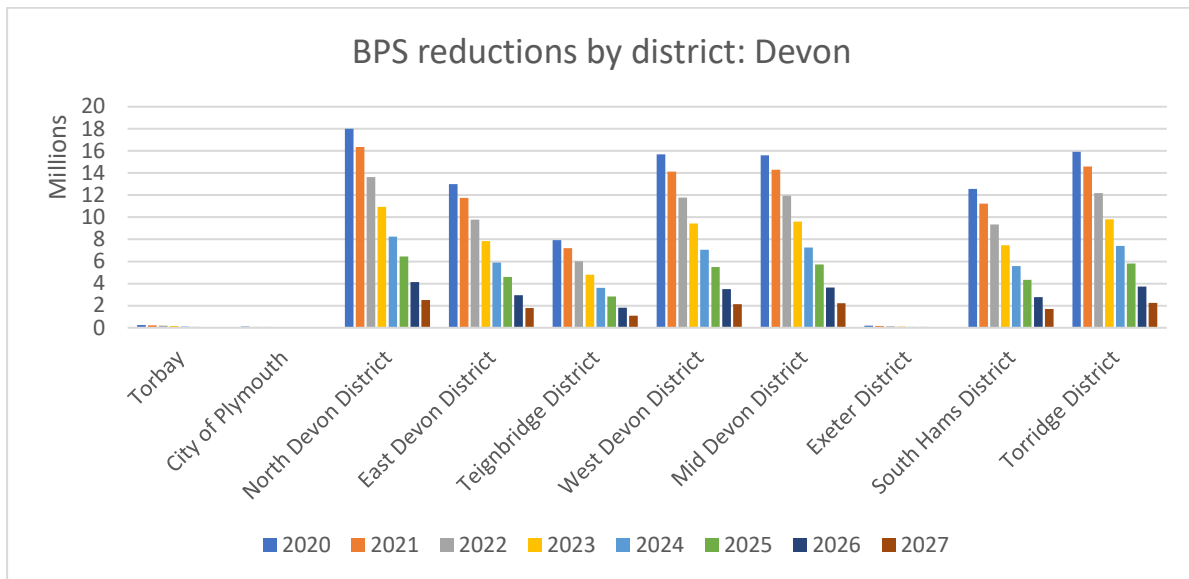
The reductions show that by 2027, the final year of payment, the total amount of BPS payments will be £33M, only 13.6% of the proportion paid out in 2020. By adding the amounts deducted each year we are able to calculate the total amount being taken from the BPS between 2021 and 2027. **Over the transition period the total BPS amount lost from the rural economy of the Great South West area will be £883.7M by the end of 2027.**

2.2 Sub-regional analysis for BPS reductions and breakdown

This section outlines the BPS breakdown by districts and for the two national parks.

Cornwall and the IoS: IoS received £142,448 of BPS in 2020 compared to over £50M to the rest of Cornwall. By 2027 the IoS will receive a final instalment of £18,478 and the rest of Cornwall just over £7M.

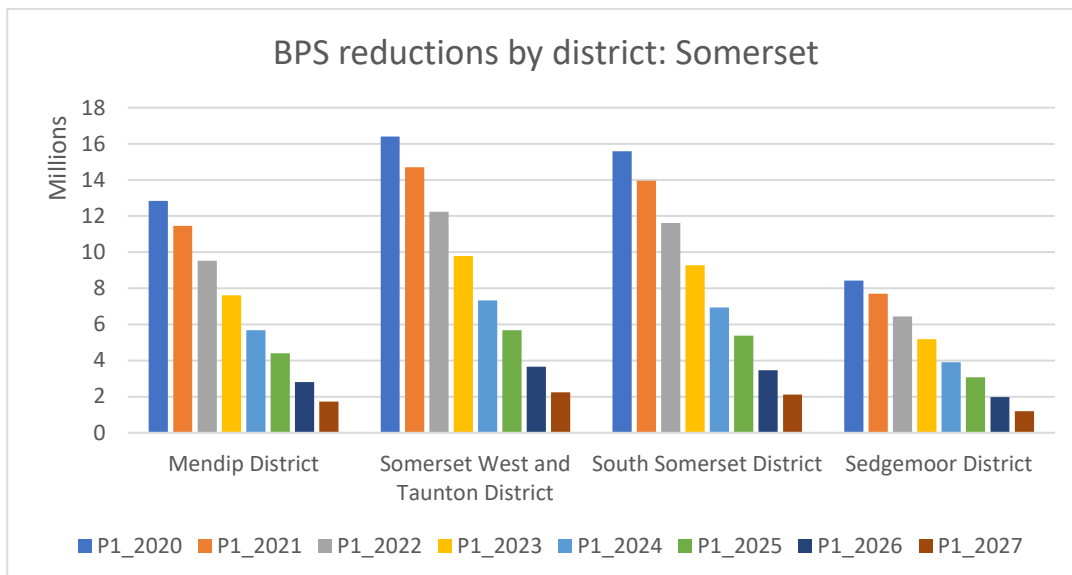
Devon has 10 district authorities of which seven have substantial rural areas and three are essentially urban (each with BPS payments totalling less than £300,000 in 2020). The other seven areas receive payments of between £18M in North Devon to £8M in Teignbridge (see table below).



By 2027 North Devon receipts from BPS will be £2.5M, with other districts receiving under £2m or £1M.

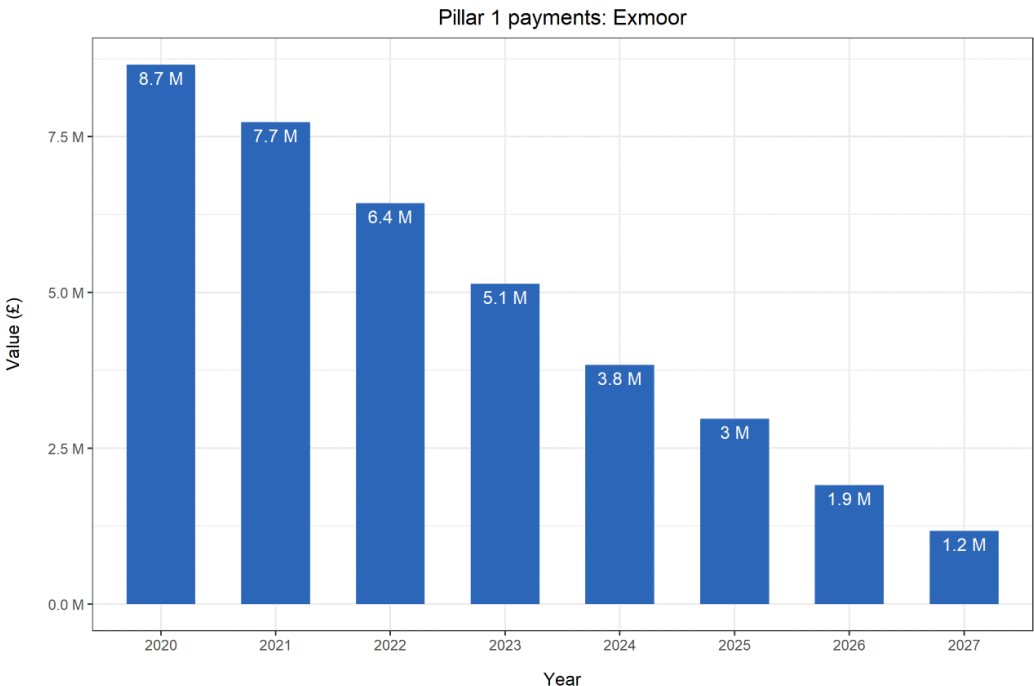
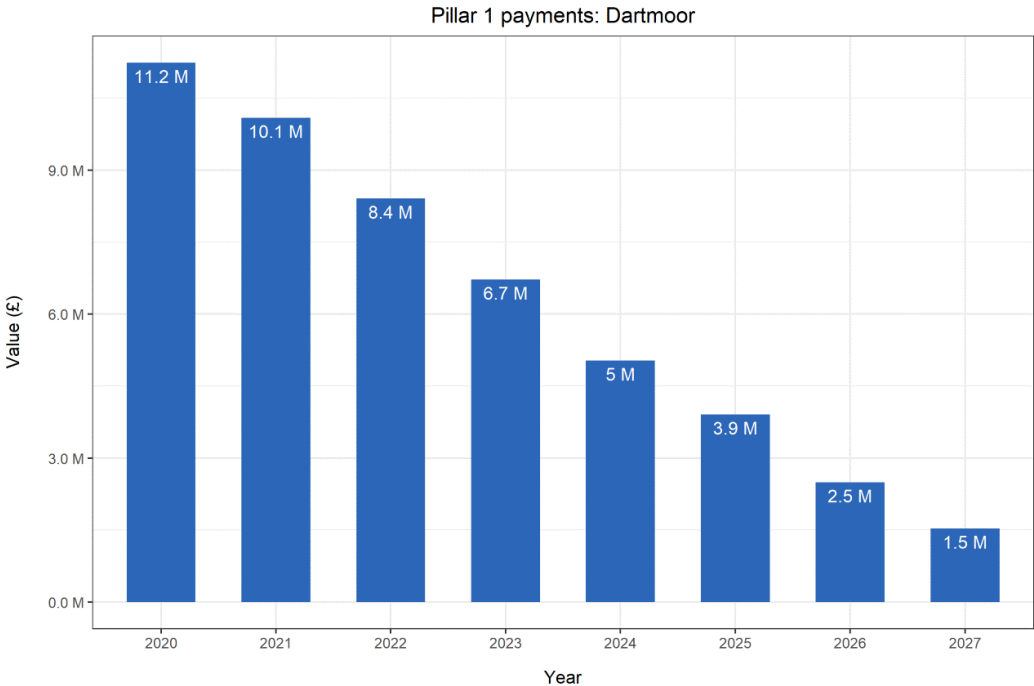
Dorset has the majority of the BPS funds, with its largely urban areas of Bournemouth, Christchurch and Poole receiving £620,515 in 2020, dropping to £73,882 by 2027, while the rest of rural Dorset received £37.7M in 2020, reducing to £4.7M by 2027.

Somerset has four districts all with a significant amount of agricultural land. The highest is Taunton with just over £16M in 2020; closely followed by South Somerset with over £15M, Mendips with £13M and Sedgemoor with £8.4M. By 2027 those in Taunton will receive only £2.2M, within a county total of £7.3M.



The two National Parks in the South West, Dartmoor and Exmoor each received around £10M from BPS in 2020: Dartmoor £11.2 M and Exmoor £8.7M, giving a total of £19.9M in

2020. This will reduce to £1.5M in Dartmoor and £1.2M in Exmoor in 2027, a total of £2.7M. The decline is shown in the figures below.

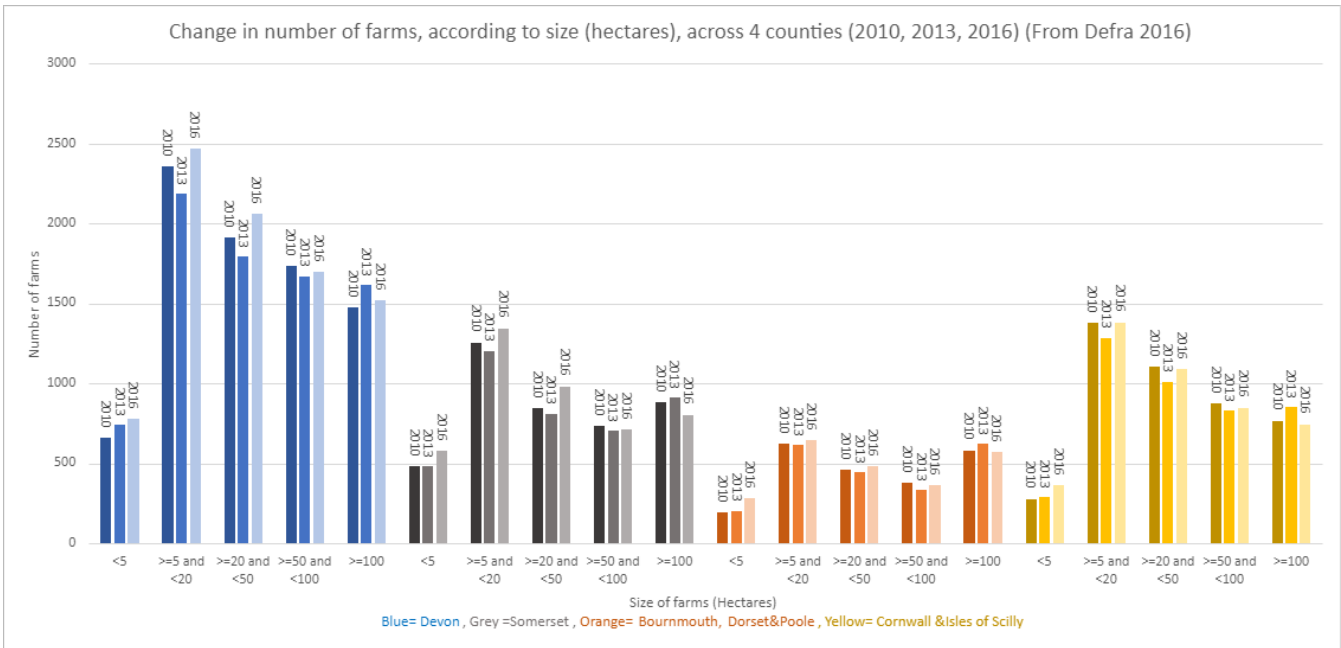


The next two sections assess the reduction in BPS by farm size, land use and productivity (2.3) and attempt to identify factors that will impact on future land use and food production in the coming years (2.4).

2.3 BPS claim by size, land use and productive output

BPS claim by size

While the calculations of overall reductions can be estimated according to the four Defra farm payment categories: <=£30,000; £30,000 to £50,000; £50,000 to £150,000; and >£150,000. It is not possible to reliably break these down geographically as the data are non-spatial. As a result, it is not possible to attribute them to counties or districts with any degree of accuracy. We have therefore explored other ways in which this can be determined.



What is clear from the Defra statistics, as shown in the figure above, is that most farms in the GSW area belong to the small or intermediate farm category (under 50ha), this is true for each county area studied. Farms in Cornwall and the IoS, Somerset and Devon tend have more ‘small’, ‘very small’ and ‘intermediate’ farms when compared to Dorset or England as a whole. Dorset has a significant share of large farms, even compared to England as a whole.

Comparing the average farm size (Table 4) shows that Dorset is close to the England average but the other three counties are closer to 60ha, about 25ha less than Dorset. This is likely to be why the proportionate BPS reduction for Dorset in 2021 is higher than the other 3 counties, 14% compared to 10% for the others in the GSW area, as a higher proportion of farms fell into the largest reduction category.

Table 4: Farm size and land ownership (from Defra 2016)

Area	Average farm size (ha)	% of Owned land
Devon	60.2	71.7
Somerset	60.7	69.9
Dorset Bournemouth, and Poole	86.4	66.5
Cornwall	57.4	66.8
Great South West	62.8	69.5
<i>England</i>	<i>85.4</i>	<i>66.4</i>

Table 4 also shows the proportion of farm land that is reported as being owned, rather than rented. Compared to the England average, the share of owner-occupancy is slightly higher and highest in Devon (72%) and Somerset (70%) with Dorset and Cornwall close to the England average. The IoS are not included in the table as they entirely rented as they are owned by the Duchy of Cornwall and the farm size is very small.

BPS by land use

Using the CORINE data set we can establish the land areas over which BPS would apply. We will also be using this later in order to establish the potential impact of future ELM schemes. The breakdown of Corine Land Cover (CLC) categories by county is shown below in Table 5.

The categories are broad because CLC is a data set developed by the Centre of Ecology and Hydrology (CEH) from 44 land use classes derived from the Copernicus programme on land monitoring. CLC products are based on photointerpretation of satellite images by national teams in 39 participating countries and the resulting national land cover inventories are further integrated into a land cover map of Europe. The categories present in the GSW area (EAA 2019) are:

- *Complex patterns* those areas found around the edge of communities with different land types in small blocks and some scattered housing.
- *Agricultural land mosaic* land clearly used for agriculture but also including scattered natural vegetation, e.g. woodland and trees, in a mosaic pattern.
- *Moors and heathland* vegetation with a low and closed cover.
- *Natural grasslands* those with little or moderate human influence often in open country.
- *Non-irrigated arable land* cultivated land parcels for agricultural use, which is the bulk of the arable land across the GSW area.
- *Pastures* land clearly managed as permanent grazing
- *Peat bogs* areas of sphagnum moss and associated vegetation
- *Orchards* areas of fruit trees and soft fruits.

While the categories may seem overlapping and not specific to England, they will be useful later in the project, for example, in determining the areas that might be eligible for different elements of ELM schemes such as the standards being offered under SFI. Any such calculations are entirely hypothetical as the main factor is the decision of the land manager to apply and subsequently commit to joining any such scheme rather than the type of land cover.

Table 5: CORINE land cover categories by county (Cole et al 2018)

County Land cover	Cornwall*		Devon		Dorset		Somerset	
	ha	%	ha	%	ha	%	ha	%
Complex patterns	160.6	<0.1	673.4	<0.1	158.1	<0.1	0	-
Agricultural land mosaic	2,808.6	1	7,364.9	1	892.7	0.4	1,266.8	0.4
Moors and heathland	22,156.9	7	21,704.2	4	6,983.9	3	6,093.2	2
Natural grasslands	1,984.3	1	21,386.9	4	713.5	0.3	8,469.0	3
Non-irrigated arable land	170,931.7	55	217,267.5	38	104,242.4	49	111,135.0	37
Pastures	109,804.3	36	289,817.9	51	101,169.2	47	175,554.5	58
Peat bogs	620.9	<0.1	15,234.6	2	0	-	1,349.4	0.4
Orchards	0	-	0	-	33.4	<0.1	195.3	<0.1
Total	308,467.3	100	573,449.4	100	214,193.2	100	304,063.2	100

*including the IoS

The figures show that the two dominant categories in all four counties are arable land and permanent pasture. Moors and heathlands are present in Cornwall and Devon to a larger extent than in Dorset and Somerset.

These categories will be used later in the report to link to future productive outputs. See also Appendix 1 for an assessment of agro-ecological aspects across the Great South West area. It would also be possible to calculate the areas of existing woodland types but this was outside the scope of this study.

BPS and productive output

To assess the productive output, we have been able to access the most recent comprehensive Defra June survey data from 2016 to better understand the configuration of the Great South West area. By selecting the local authority level, we are able to match the area of the subsidy analysis in section 2.1, but we are not able to link the two sources directly due to the nature of both datasets. What is clear is that the Great South West area is important for British farming, with 13.5% of England's agricultural land and 18.5% of farm holdings.

In this section the focus is on agricultural labour, the material in Appendix 2 is taken from the same Defra statistics and complements this section covering farm types and other categories. The South West as a whole has a higher level of farm labour compared to its land share in England, largely because of the higher proportion of livestock farms, which are more labour intensive than other farming systems.

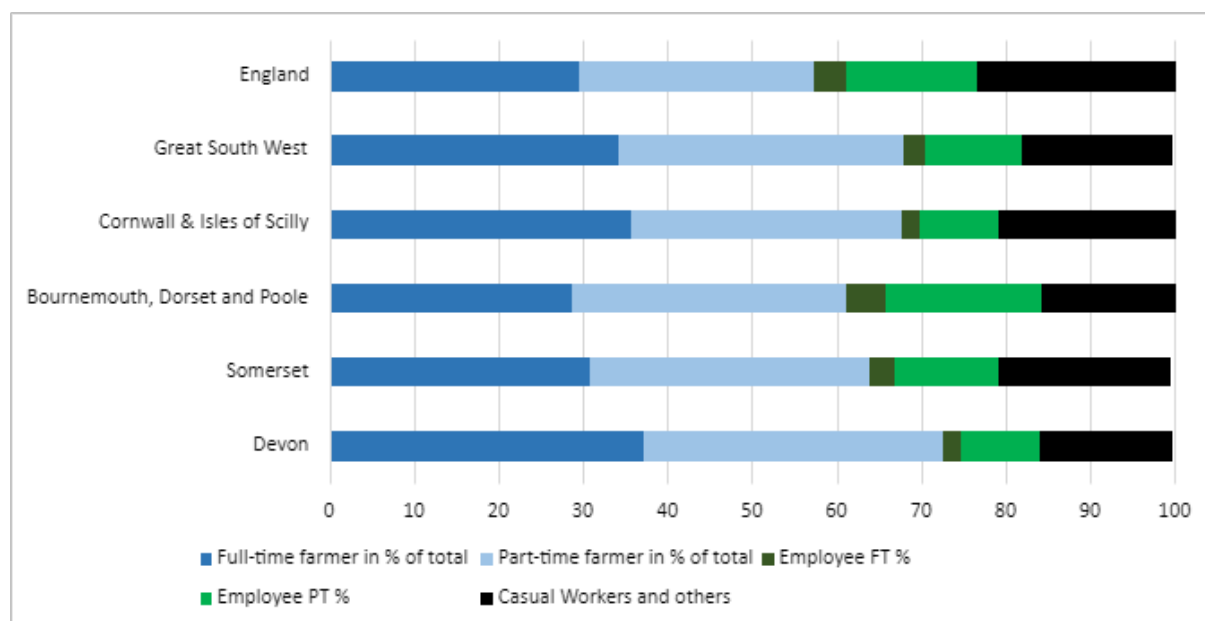


Figure 2 Comparison of the structure of labour in farming in the Great South West and England (Source: Defra 2016)

Figure 2 shows the structure of agricultural labour in England and the GSW. Of the four counties Dorset closely matches England as a whole, although with more part-time farmers. Devon and Cornwall and the IoS have the most full-time farmers (37 and 35%) and the least part-time employees suggesting a strong link to small family farms. The next table shows the proportion of labour units by hectare and by holding, which helps indicate the size of farms in terms of the labour force.

Table 6: Agricultural Labour in the Great South West

	ha/Labour unit	Labour unit/holding
Devon	26.14	2.30
Somerset	24.46	2.48
Bournemouth, Dorset and Poole	32.68	2.64
Cornwall & Isles of Scilly	23.66	2.43
Great South West	26.05	2.41
<i>England</i>	30.25	2.82

Table 6 shows that agricultural labour is concentrated in Cornwall and the IoS, Devon and Somerset, reflecting the higher labour demand of livestock and mixed farms compared to arable enterprises. Horticultural enterprises are very labour intensive. It is particularly stark when one compares the number of hectares managed per Full-Time Equivalent (FTE) labour unit in farming. Dorset is 6 ha above the SW average and 2 ha above England's average. Most farms have around 2.5 FTE per holding, slightly less than in England, reflecting the higher share of part-time farmers in the area (linked to small farms) and the prevalence of farm diversification activities (e.g. tourism accommodation) in the region.

The four LEP areas in the GSW area depend much more on family labour compared to the rest of England, this is particularly high in Devon where 72% of the labour is from family members. Dorset, again is much closer to England's average, linked to its higher arable sector and larger farms. We note that all four areas use less casual and part-time labour than in the average for England.

Farming in the south-west is still predominantly a family business of a relatively moderate size compared to England, this is partly due to a focus on labour-intensive livestock farming. This is particularly important for the loss of BPS, as smaller farms with higher labour costs will be hit harder by a reduction in income as BPS makes up a higher proportion of that income. The higher presence of family farms might mitigate this a little, because family members can absorb reductions more easily and may have diversified income, which can offset losses from farming operations. However, the financial impact will be hard in the livestock sector because support payments make up a large proportion of net farm income for such farms. The Great South West is an area with a great diversity of farming conditions, although milder than other regions of the UK it features some very marginal rough-grazing areas of particular ecological importance. Finally, despite its minor importance in statistics, horticulture has an important role in some areas of the South-West, especially Cornwall and the IoS. The relative remoteness of some parts of the region is another factor that will be explored, as this provides both challenges and opportunities.

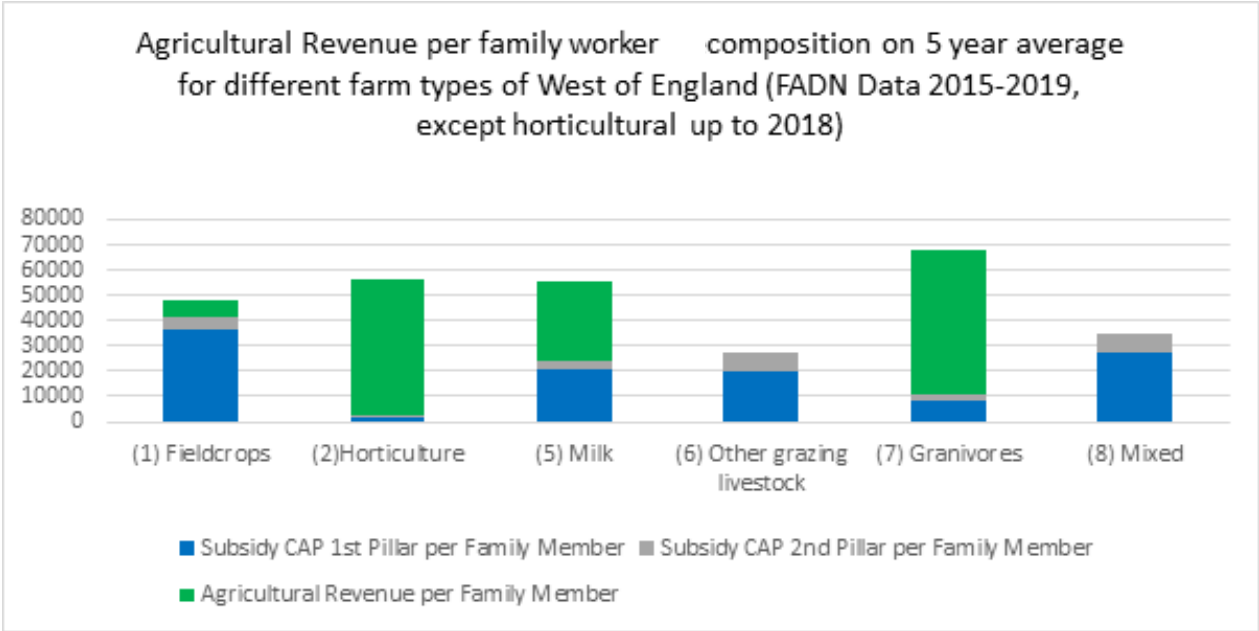
2.4 Identify factors that impact on future land use and food production

In this section we look at current thinking on the different factors impacting land use and food production. By way of introduction we include a review of Defra data over the past five years with FADN data from 2015-19⁵ so that the direction of travel is clear; more detailed coverage is contained in Appendix 3. Overall, this analysis suggests that small farms are more vulnerable than larger farms to the future changes due to their greater dependence on current support measures and fewer opportunities to manage change during a transition

⁵ FADN is the [Farm Accountancy Data Network](#) monitors farms' income and business activities. Derived from the DEFRA Farm Business Survey it is based on the outputs of a selected number of business across the West of England. Note the data is via a European site so all figures were given in Euros.

period. As we have seen from previous sections, such farms are particularly important for the Great South West area. Additionally, it is a concern to see the high dependence on support measures of some farming systems, despite an increase in farm size over many years.

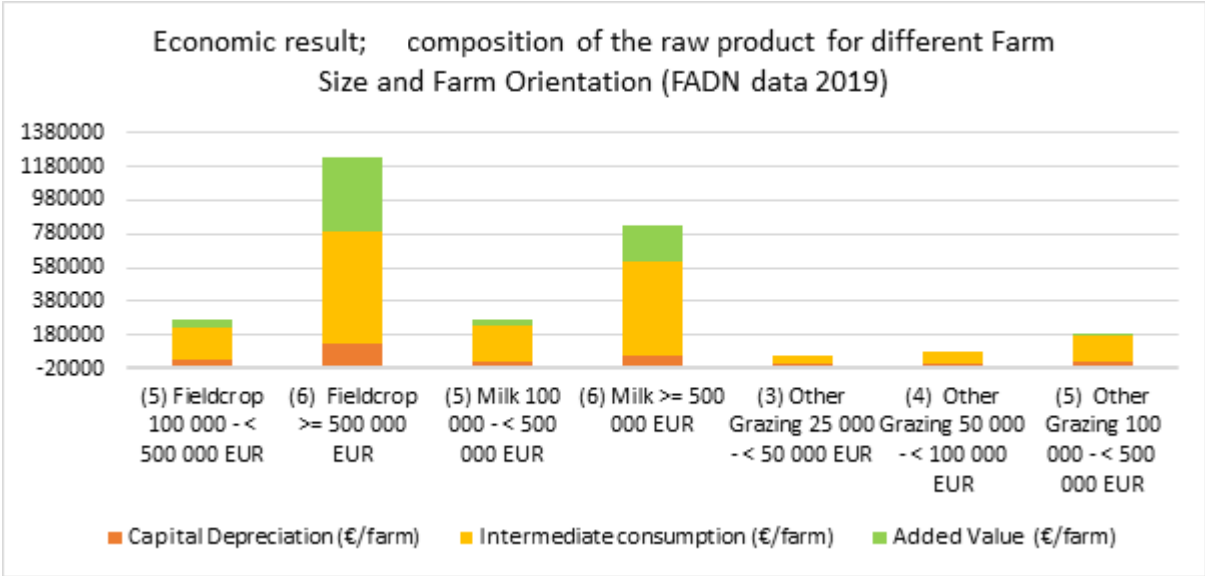
Looking at agricultural revenue per family worker shows that most farms generate over £20,000 per worker, which equates to the minimum wage in the UK, but grazing livestock farms tend to struggle to reach £30,000, which might be considered a more sustainable income. We also note a stark contrast between meat and field cropping farms in terms of dependency on support subsidies, with field cropping farms much less dependent. The 2nd pillar subsidies are focused on livestock farms that are potentially those with high nature value environmental locations. Horticulture (the field scale growing of vegetables), with its high use of farm labour has a similar income level as pig and poultry farm types, but both are minor sectors in the GSW area.



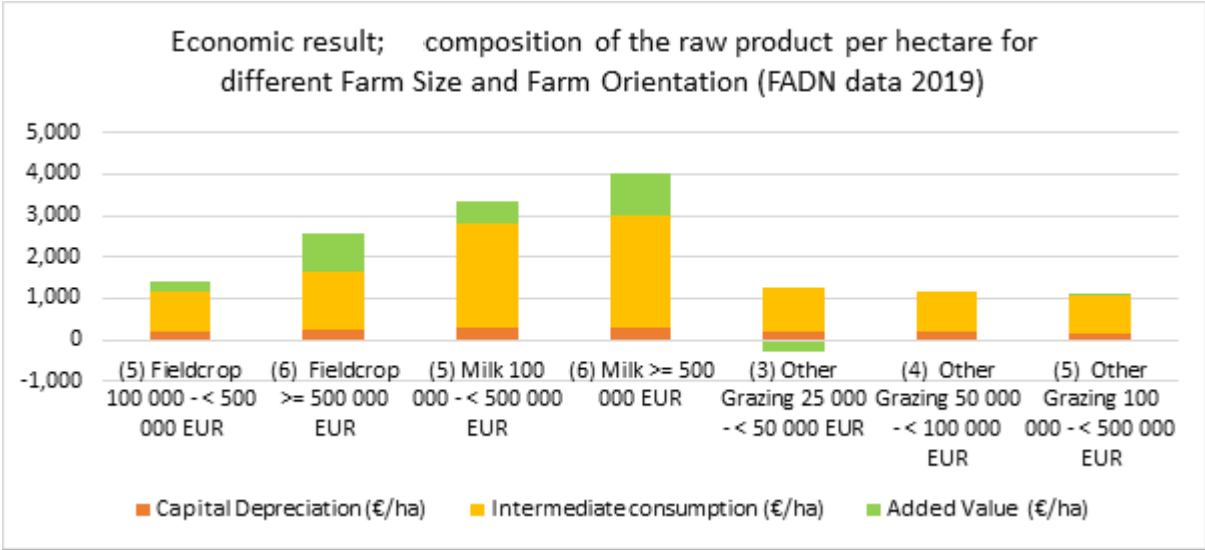
The proportion of farm support in relation to overall revenue per family worker can be determined by combining the blue and grey components in the table. Horticulture is the least reliant on support (5%) followed by Granivores (pigs & poultry) with 15% and both have high overall revenues. In this sense the high added-value production systems are more self-sufficient according to this FADN data, although these farms will be more exposed to volatility input and output markets, as they depend more directly on them to be viable. As shown by the recent issues with a lack of workers in abattoirs.

Dairy sits in the middle with 43% and most of this provided by Pillar 1 support This leaves a high proportion for field crops (86%) of a relatively high total revenue comparable to horticulture and milk. The stark take away from this graph is that the lowest revenues are for the 'other grazing livestock ' and 'mixed' holdings and these are also 100% reliant on support, of which the highest proportion is via Pillar 2 for environmental management

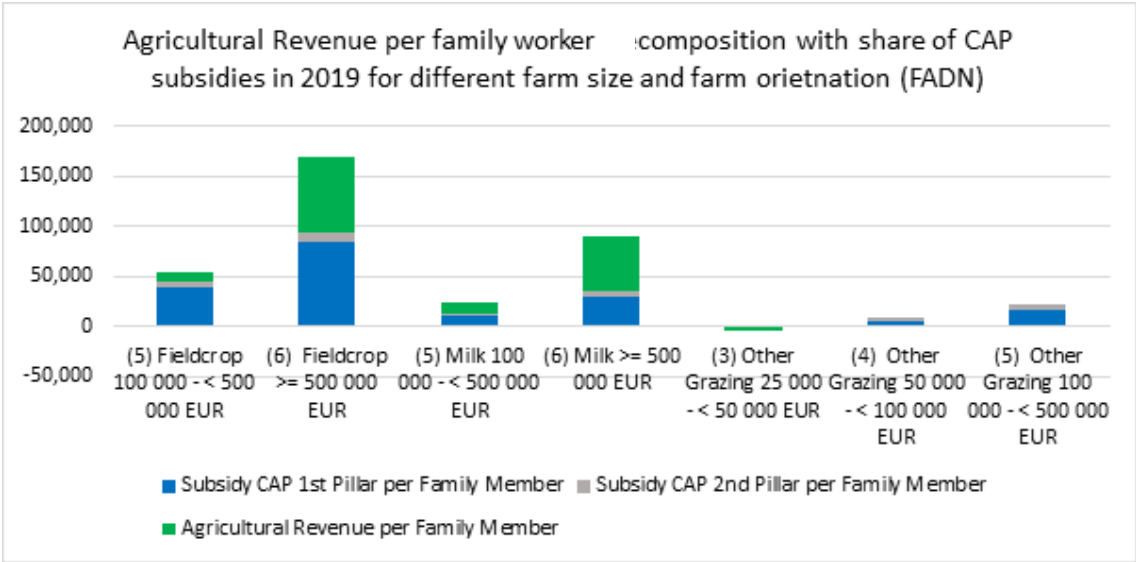
Next, we investigated whether farm enlargement was an adequate solution to deal with the removal of subsidies. We looked at 2019 FADN data split by farm output size in financial terms (standard output per farm type) for field crop (arable), milk (dairy) and other grazing livestock farms. The table shows that larger size has increased added value for each farm type. The smaller the farm, the smaller the added value over raw product ratio. Note that for grazing livestock the levels of added value remain extremely low but increase slightly as the size increases but highlighting how challenging these enterprises are at any scale.



Looking at the per hectare analysis emphasizes that there are higher level of outputs of land as well as labour, for field crops and milk, which in turn lead to higher economic value. This is not true for grazing livestock farms where increasing the size of the farm leads to a slightly lower output per hectare (possibly linked to greater shares of rough-grazing land or the subsidy factor). Therefore, across the GSW area, Dorset has the larger holdings, comparable with England, but Devon and Cornwall in particular have many smaller holdings with livestock which will be particularly challenged during the transition.



The agricultural revenue analysis per family farm worker below shows that there is a clear incentive to increase the size of the farm to reduce subsidy dependence for all sectors except other grazing livestock. The background of challenging output prices faced over the last five years is pronounced. Small grazing livestock farms are in a particularly vulnerable position as their income was negative in 2019. This reflects other analysis undertaken in the South West, e.g. for Exmoor’s Ambition (Rural Focus 2018).



Overall, these analyses show that the GSW is largely pastoral and livestock-oriented, with smaller farms than the national average. Since smaller farms are more vulnerable than larger farms to future changes as a result of being more dependent on current support measures, they may see fewer opportunities to manage change during a transition period. This remains true even though the likely trend will be towards increases in farm size, as the overall number of farmers reduces. As we have seen from previous sections, such farms are particularly important in the Great South West area.

2.5 Identify the take up and use of on-farm business advice to support the transition

What we are currently witnessing is arguably the biggest change to the agriculture and land management sector since 1947. The scale of government’s ambition regarding land managers’ participation in the new ELM schemes is also unprecedented and is not uniform across all the regions of the UK. Farmers and land managers in England are facing more significant changes than farmers elsewhere in the union. The evidence from previous policy and market changes suggests we should anticipate increased stress and vulnerability within the sector and associated human (e.g. health) costs as a result of negative mental health and well-being (Lobley, Winter, and Wheeler 2018 and Rose et al 2022). Naturally it would be expected that this change will impact land managers’ ability to make decisions, including those related to ELM and the overall farm business. The direction of any response is very

difficult to determine given current high product prices, even though more than matched by higher input prices. The current restructuring of the industry may mean some farms tend towards intensification, in a 'more of what we know' response whose likelihood is heightened by the current events in eastern Europe heralding shortages in global food markets (Lenormand and Dwyer 2022).

This section focuses on what is known about the use of on-farm business advice and what we anticipate when little or no professional advice is requested or received within farm businesses. First, government-funded advisers are known to be valued by land managers for their ability to engage and encourage positive environmental participation and output. They have been a positive force for behaviour change, as shown by the Catchment Sensitive Farming programme (Chivers 2021). There are a number of studies which show that trusted, good quality advice improves land manager participation in and quality of engagement with agri-environment schemes and with innovation (Mills et al. 2018; Rose et al. 2018; AIC 2013; Ingram 2008).

A key factor in the delivery of these policy objectives will be the advisor-advisee relationship across the farming, environmental and broader land management sector. This includes the quality of engagement and the delivery of environmental public goods in a cost-effective way that maximises value for the tax-payer. Many commentators from all sides have identified a risk that the success of ELM policy is dependent on this relationship, and it is currently largely outside the influence of Defra. There is a concern that the issues are being siloed, meaning that environmental advice and guidance is being separated from business advice and guidance when the issues are interrelated. The aim should be to become resilient for food and fuel security, building healthy living soils to underpin ecological recovery, deliver nutrient dense food with multiple benefits (such as clean water and reduced flood risk) and restore biodiversity. With this approach it would be possible to build local resilience that 'builds back better' a strong rural economy that is self-reliant and integrates action and management of resources.

Early evidence suggests that the Farming in Protected Landscapes (FiPL) programme in Dartmoor and Exmoor has been attractive and funds are being spent. It is not a requirement to be a BPS claimant to participate with most money being targeted at environmental projects. The Future Farming Resilience Fund (FFRF) however, has been less attractive with the 19 England-wide providers not able to secure the level of support expected. Efforts, including some specific to the GSW, are being made to rectify this. Similarly, the SFI pilot only just secured the thousand or so farms anticipated for the pilot with increasing concern regarding payment rates. Drawing conclusions from this is difficult as it is a constantly changing arena, but it would seem farmers and land managers are not confident that the current information, either current advice and guidance or provisions for testing and improving SFI, are sufficient. Therefore, the role of more locally-based public or third sector bodies is key.

The ELM ambition is to expand the range of public goods which are delivered, notably in nature recovery, increasing tree cover and mitigating and adapting to changes presented by the climate crisis. Initial ambitions concerning public engagement with the environment and increasing public access seem to be less at the forefront but these remain important public goods at local level. Evidence from previous schemes suggests that many land managers

are fearful of opening up their holdings to the public (Morris, Mills, and Crawford 2000) and/or reluctant to increase tree cover (Staddon et al 2020). The presence of skilled advisors, alongside suitable payment rates, is key to delivering such outcomes, via negotiation and an understanding of willingness and ability to integrate them within business planning (Short 2015 and Black, Phelps and Short 2022). The essential role of a facilitator and/or adviser can be the catalyst for swift and coordinated action to gain support from a wide range of experts, helping farms plan environmental and economic recovery, contributing to wider public health and wellbeing. The roles of facilitators and advisors are complementary and often overlapping; the common output, however, is a more efficient and expertly delivered transition (Mills et al 2018, Ingram et al 2020).

The issue of equity is important, here. Prager et al (2016) and Sutherland et al. (2018) found that private, commercial advice favours those who are able to afford to pay for it". In addition, large-scale businesses find it easier to access advice, leverage financing and are therefore more likely to act to change their land management business. Sutherland et al (2017) and AHDB (2020) found that many small-scale land managers indicated that they would not pay for formal advice and rely heavily on peers. Those groups shown to be largely ignored by commercial advice providers included small and/or marginal land managers (e.g. hill farmers); female land managers; young land managers or new entrants; farm employees and contractors; producer groups; and part-time land managers (Prager et al 2016). These include many categories of farmer that we know are more prevalent in the GSW area than in England as a whole, suggesting that the 'reach' of commercial advice across farms in GSW England will be particularly low. Thankfully the GSW area is well served by a number of non-profit advisory services such as FWAG and the Rivers Trust as well as many others. The LNP funded work will be a good opportunity to assess the reach of these providers. Perhaps taking on board the recent findings of the reasons why farmers are 'hard to reach' and overlooked (Hurley et al 2022)

From the evidence from earlier sections of this report, based on Defra official figures linked to the agricultural transition (2020) it is clear that many GSW farmers will be heavily income-reliant on the current support systems. The Defra economic impact document for the transition plan stated that they expected 10% of farms to close as a result of the changes (Defra 2020). AHDB research suggests that the majority of farmers are not planning changes, with 76% of beef and sheep and 67% of cereals farmers are either not planning on making changes or adopting a 'wait and see' approach (AHDB 2020). Such a response is perhaps not surprising, given the scale of change taking place and the lack of clear guidance on what is ultimately going to be available.

The feedback we have received informally suggests that there is no shortage of private consultancies and other providers offering information and a commentary on the current changes to the support system, as well as the impact on markets. However, it is impossible to gauge how useful this provision will be, in terms of supporting robust business planning and assisting adaptation among the range of farm businesses in the GSW area. The development of the Whole Farm Plan initiative by Devon County Council (DCC) is very welcome but any success will be determined by the extent of its reach into the farming sector.

We know that there has been an increase in health and wellbeing issues in the sector, over the past two years. Research by Rose et al (2022) and Hurley et al (2022) show farmers have been reporting increased levels of stress, feeling more anxious and depressed and with higher levels of those referring to themselves as suicidal. Factors include 'not having the right information (54%) and not being positive about the future (47%)'. Clearly, decision-making will be made more difficult for individuals and families facing these kinds of situation.

To summarise, the take up and utilisation of on-farm business advice to support the transition would appear crucial for farmers and land managers but on current evidence, it seems that many in the South West area will not be accessing this, connected to a whole range of factors. We suggest there is an urgent need to devote more effort to increase levels of engagement with professional, environmentally-informed and future-focused business development advice, among farm families across the GSW area.

2.6 Calculate the financial value/implications of the transition from BPS to SFI/ELMs in the wider rural economy across the GSW area

There are three new components being planned by Defra under the Environmental Land management (ELM) programme. The initial paragraphs outline what we know as of March 2022 and this is used as a basis for assessing and estimating what contributions they might bring into the GSW over the coming decade. The summary of the three components is as follows, as of 30th March 2022.

Sustainable Farming Incentive (SFI) is aimed at being attractive to the majority of farmers with a target of 70% of farms in the scheme by 2028 (Defra 2022)

- The initial offer available in 2022 is to:
 - enhance the natural health and fertility of soils
 - contribute to our efforts to reach Net Zero
 - help us assess the condition of the moorlands in order to invest in their restoration.

There are a number of standards currently available (as of 30th March 2022):

- the Arable and Horticultural Soils (A&HS) standard
- the Improved Grassland Soils (IGS) standard
- the Moorland and Rough Grazing (M&RG) standard (introductory level)

How much of these three areas might apply to areas in the Great South West will be determined in Section 3.3. What this analysis is not able to do is to calculate where GSW farmers and land managers are able to meet these standards.

The payment levels are:

	Introductory	Intermediate	Advanced
A&HS	£22/ha	£40/ha	In 2023
IGS	£28/ha	£58/ha	In 2023
M&RG standard	£265/agreement & £10.30/ha with further £6.15/ha for common land	In 2023	In 2023

Under SFI Defra will also fund an Annual health and welfare review. This will take the form of a yearly farm visit from a vet or vet-led team. The aim is to increase farmers' awareness of the health and welfare of their livestock (beyond what are in many cases already high levels), and the options available to them to address any issues.

The payments rates per holding annual review for the Annual H&W review are as follows:

- pigs - £684
- sheep - £436
- beef cattle - £522
- dairy cattle - £372

Other areas under SFI are likely to be announced ready for agreements in 2023 covering:

- nutrient management
- integrated pest management
- hedgerows.

In 2024-5 the following standards have been indicated for development:

- agroforestry
- low and no input grassland
- moorland and rough grazing (all levels)
- water body buffering
- farmland biodiversity
- organic
- on-farm woodland
- orchards and specialist horticulture
- heritage
- dry stone walls

Local Nature Recovery will be an *'improved and more ambitious successor to the Countryside Stewardship scheme in England. It will pay for locally-targeted actions to make space for nature in the farmed landscape and the wider countryside, alongside food production* (Defra 2022). This could include, for example:

- managing and creating habitats
- adding trees to fields or hedgerows, or
- restoring peat or wetland areas in appropriate areas of the farm.

The earliest that farmers and land managers will be able to apply to LNR is 2023, with a national roll out in 2024. Defra have indicated (Defra 2022) that LNR will contain options just as CS does and have a simplified application process like Mid-tier CS. There will be a greater focus on outcomes and working responsibly in a local context. LNR will enable agreement holders to *'dovetail with private schemes and markets for high-quality, accredited environmental outcomes'*, although the mechanism for this is not clear at the time of writing.

LNR will complement the SFI, with agreement holders able to be in both, subject to checking to avoid double funding.

Early indications are LNR will be focused around themes, such as:

- managing feeding, shelter and breeding areas for wildlife on arable farms
- managing, restoring and creating grassland habitats such as species-rich grassland on farms and in the wider countryside;
- managing, restoring and creating wetland habitats such as ponds, lakes, reedbeds and fens; and
- managing, restoring and creating lowland heathland.

Options will be expected to contribute to meeting statutory targets under the Environment Act and meeting Net Zero targets, as well as being operable alongside privately-funded environmental schemes (e.g. those running with water company funding, at present). A full list of options is expected during 2022 and the scheme will be open to a range of land managers including foresters. Collaboration will be key to LNR, but most applicants will be individual farms.

Landscape Recovery *'is for landowners and managers who want to take a more radical and large-scale approach to producing environmental and climate goods on their land (Defra 2022).*

This scheme represents a new approach to *supporting long-term, significant habitat restoration and land use change*'. Applications opened in early 2022 under 2 themes:

- recovering and restoring England's threatened native species, defined as Species of Principal Importance in England; and
- restoring England's streams and rivers.

A second round is promised for later in 2022. The projects will work at scale, needing between 500-5,000 ha to be eligible. The first round is for 15 sites covering over 10,000 ha of habitat restoration. Interestingly the other output for this component of ELMs is quoted as being 'at least 25 to 50 kilotonnes carbon savings per year', indicating a clear link to climate change. The aim is for projects to have a two-year development phase meaning that the first agreements would be operational in 2025-6. The aim of the development phase, similar to the process for Heritage Lottery partnerships, is to ensure the funding arrangements and detailed plans are all in place, including a combination of public and private finance, before the actions begin. LR will involve a single agreement with a 'legal entity' who takes responsibility for delivery against a project plan, similar to the procedures arranged for AES agreements on common land, or with large landowners like the National Trust.

All land is eligible provided the applicant(s) have the management control to be able to deliver the changes required. Public bodies can apply in partnership with other land managers. Land under existing AES agreements can be included provided it links with land which is not in AES and provides a coherent approach to nature recovery. The inclusion of funding for a facilitator is welcomed. The key criteria when assessing proposals will be:

- longevity of the actions proposed
- environmental benefits: species recovery / river restoration and other benefits

- carbon and climate resilience
- social impact: public access, community engagement and other benefits
- project leadership, delivery and costs.

It is clear that the focus of LR is landscape recovery and any farming undertaken under this component of ELM would be a secondary consideration and only considered where it is essential to delivering nature recovery. On recent Q&A calls the Defra staff have stressed that while regenerative farming is good for the environment, as an approach it suits the LNR tier of ELM more than the more radical ambitions of LR. The management required in LR is anticipated as heavily interventionist, looking for major hydrological or other landscape 'engineering' actions aimed at long-term change. Agreements of 30 years or more are preferred with no opportunity for changing back to previous management. Such changes are not likely to be attractive to many farmers, across the GSW area but existing farming groups or clusters might form the start of the core areas needed to begin the thinking necessary.

The next section looks at the role of AES and future trajectories of this type of support payment.

3. Assessing the potential of current AES and future influences on ELMs in the South West

3.1 Farmer and land manager participation in AES across the South West

Currently across the GSW there are two agri-environment schemes (AES) in which farmers and land managers are involved: Environmental Stewardship and Countryside Stewardship.

Countryside Stewardship (CS) remains open to applications and will be until at least 2023. CS, and ES outlined below, originally operated under the legal framework of the Rural Development Regulation of the Common Agricultural Policy (CAP), covering the period 2014-2020. Since the UK left the European Union, the schemes are covered by UK government regulations. The core environmental issues to be addressed by the CS scheme are biodiversity and resource protection, notably water quality as determined by the Water Framework Regulations (based on the EU WFD, 2000). Other aspects, such as historic environment, landscape and addressing climate change are secondary scheme objectives.

The structure, focus and length of multi-annual land management agreements has changed by comparison with the predecessor ES with two main strands, both using a competitively scored application process:

- Higher Tier (HT) - targeted at protecting and enhancing the most environmentally important sites which often require more complex management, supported by bespoke advice from Natural England (NE)/Forestry Commission (FC).
- Mid-Tier (MT) - focused on addressing specific environmental issues in the wider countryside, such as reducing diffuse water pollution or improving the farmed environment for farmland birds or pollinators.

Organic management options are available within MT and HT and can be used in combination with non-organic options in an agreement, or alone to form a purely 'organic' agreement. Multi-annual agreements are typically five years in length, though some options and agreements in complex settings can be agreed for 10 years.

Environmental Stewardship (ES) is no longer open to new applicants, and the last remaining schemes are in the Higher Level (HLS) tier, which are 10-year agreements. ES was available between 2005 and closed to new applicants in 2014. The agreements considered here will all be phased out by 2024, as current agreement holders are mostly being offered new agreements in CS. However, some are being offered the opportunity to extend their HLS agreement on a yearly basis until the ELMs programme is fully operational (planned for 2024). The condition for this type of individual extension is that the HLS agreement is meeting its objectives; where Natural England indicates that an agreement is not achieving its goals a new, revised CS agreement is considered.

In this section the current level of investment coming into the GSW is assessed for both schemes, with some assessment of the number of claimants, as compared to those receiving BPS. The data for these calculations is based on NE data as of January 2022 and covers all 'live' (i.e. active) agreements at the point when the dataset was created. The calculations assume that the agreements end at the time specified on the database, and without predicting any extensions.

Data (in ESRI shapefile format) on agri-environment payments were downloaded on 28/01/2022 from the Natural England Open Data Geoportal. These data differ to the P1 data in that ES and CS agreements are "point" data, which are geographically referenced using a precise x,y coordinate. Each point represents the geographical centre of each ES/CS agreement. This means that extracting agreements which fall within a specific boundary was more straightforward than with the P1 data - which is aggregated to postcode districts. The basic steps of the workflow are as follows:

- Initiate a programming loop based on the target boundaries (i.e. counties, national parks)
- Clip AES data layer to the geographical extent of the target boundary
- For each boundary area, calculate the total AES payments for each year represented in the data layer. Note, the approaches for calculating annual totals ES and CS differ due to the structural differences of the data. The costs include both annual and capital payments as the total value of the agreement is divided by the length of the agreement. This is quite complex and is fully documented in the R code. For more details, see: <https://robertberryuk.github.io/GSWP/analysis.html>.

Environmental Stewardship

The next four graphs show the level of payments at county level and how these will change from 2018-2024.

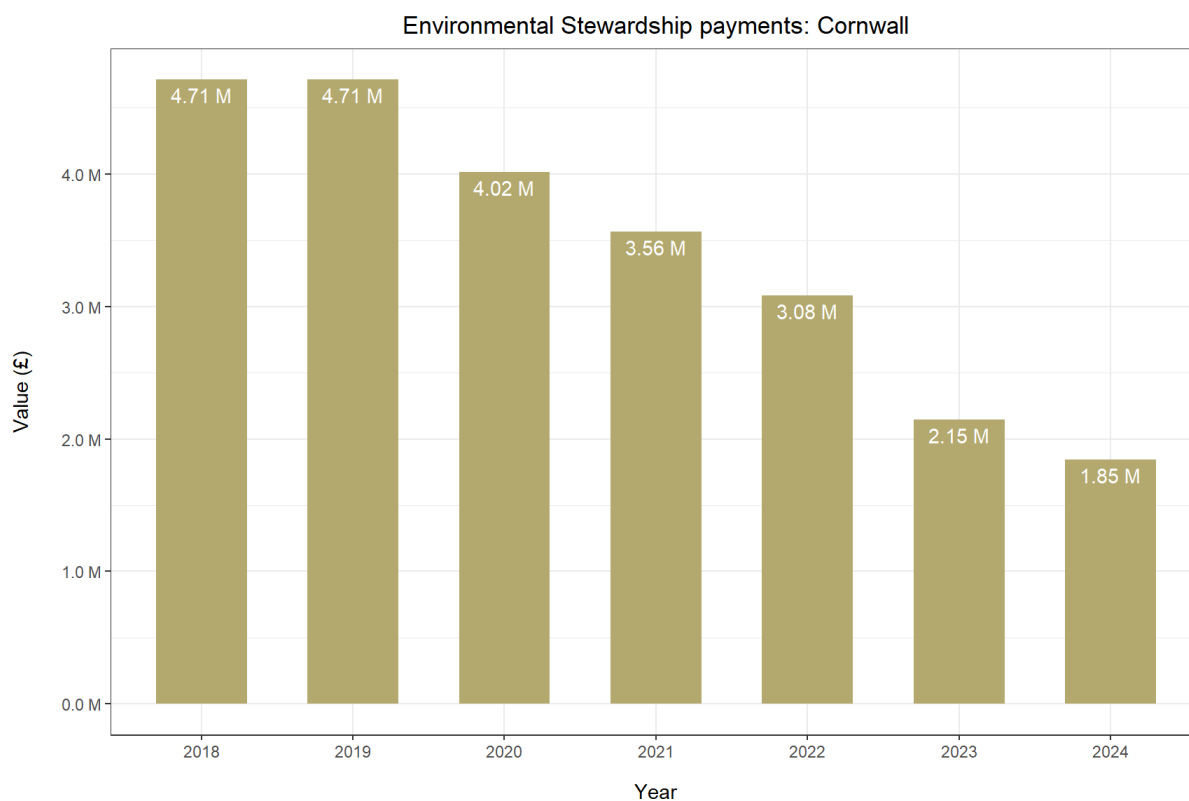
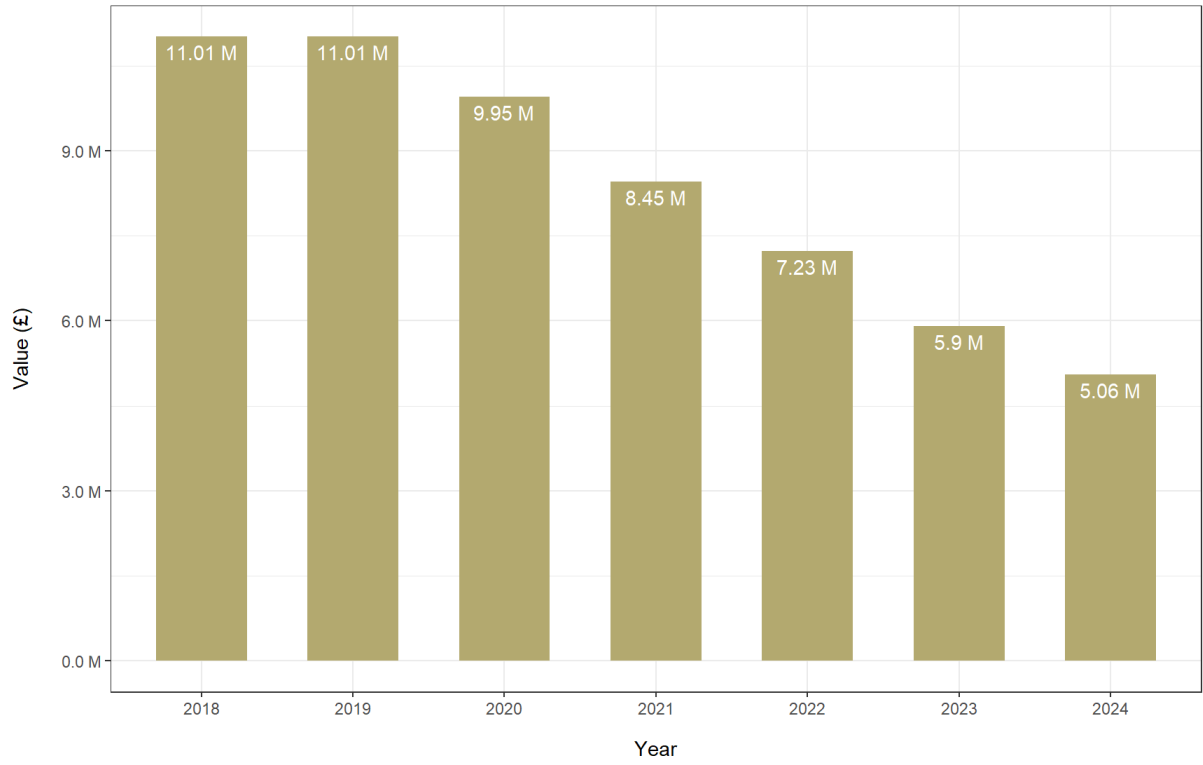


Figure for Cornwall Includes IoS

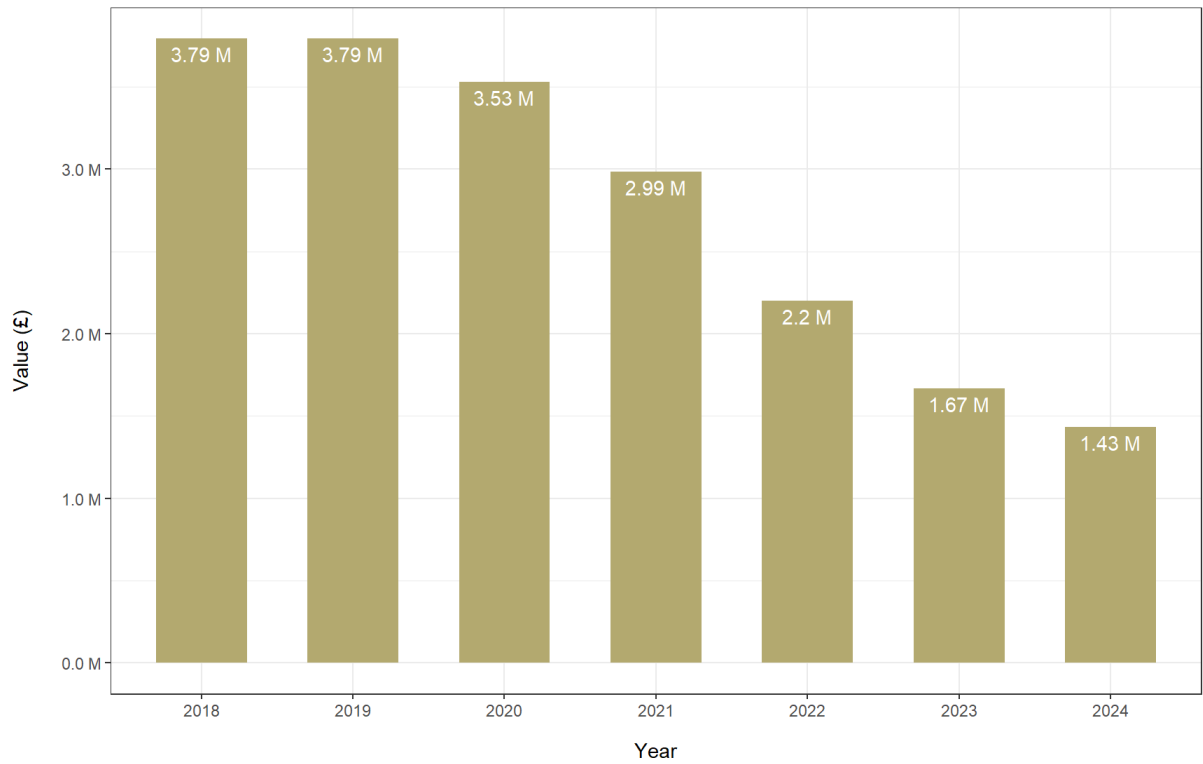
In 2022 there were 285 ES agreement holders undertake management for which they received £3.08M. This gives an average agreement value of £10,807. As expected ES payments are reducing from a high of £4.71M in 2018/9 and are estimated to fall to £1.85M in 2024 when it is anticipated that all ES agreements will end and move to agreements under ELM. This doesn't account for any extensions, so the 2023 and 2024 figures should be viewed as a minimum, and might actually be higher.

The figure below shows the ES figures for Devon, where there are 557 ES claimants in 2022 undertaking management for which they received £7.23M, an average of £12,980 per agreement (covering both annual and capital payments). The payments are highest in 2018-19 at £11.01M and are estimated to fall to at least £5.06M by 2024.

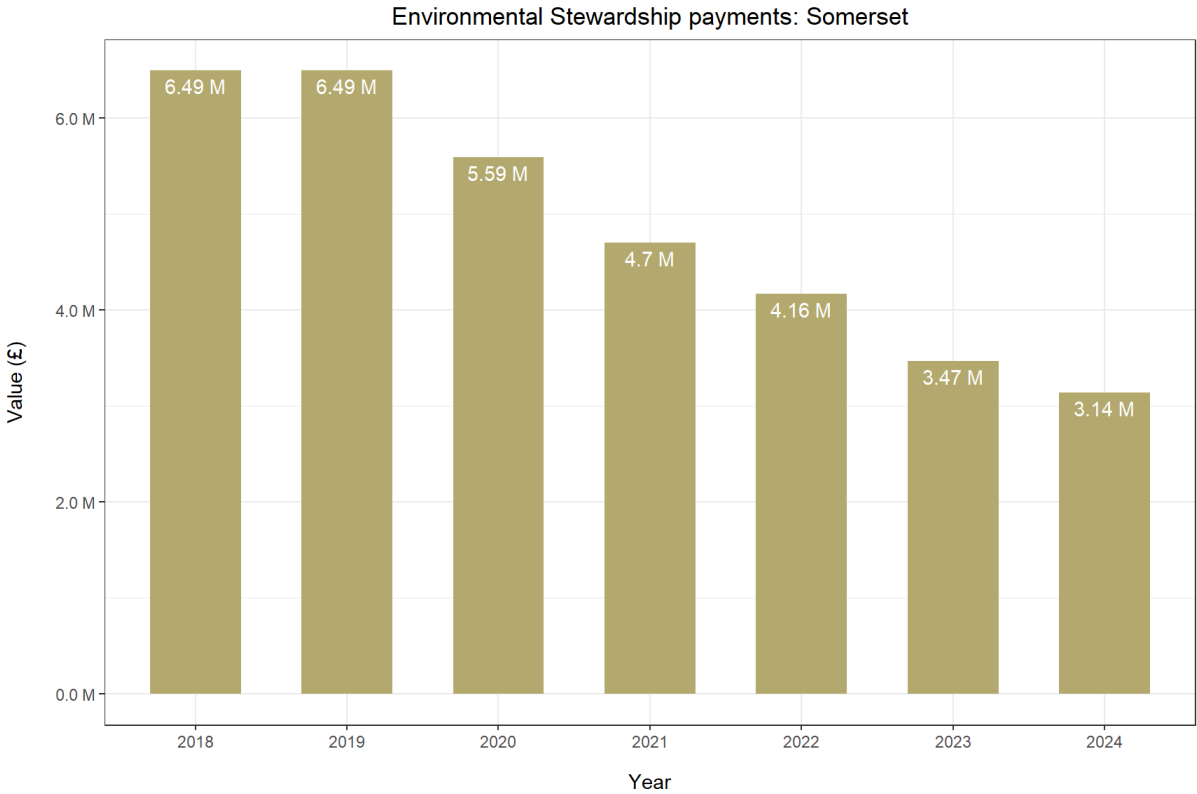
Environmental Stewardship payments: Devon



Environmental Stewardship payments: Dorset



The figure for Dorset shows a total of £3.79M in 2018-19 falling to at least £1.43M by 2024. In 2022 there were 207 agreement holders undertaking management that received £2.2M, which is an average of £10,628 per agreement.



The final figure in this set shows the changes in ES payments from 2018-2024 in Somerset. In 2018-19 this was £6.49M and reduced to at least £3.14M in 2024. In 2002 there were 566 agreement holders undertaking management worth £4.16M, an average of £7,349.

Before undertaking any comparisons, the next section shows the figures for countryside Stewardship over the same time period. Together the two totals will show the recent and future AES payments across the GSW area.

Countryside Stewardship

The next four graphs show the level of payments at county level and how these will change from 2018-2024.

The figure for Cornwall and the IoS shows that numbers of CS agreements increased from 2018 to 2021, with 2022 at similar level. It is possibly lower in reality, as by then more of the earlier schemes from 2016 would have ended and may not have been renewed. The lower levels for 2023 and 2024 are based on current agreement holders and not any new agreements starting in those years. Looking at 2022 there were 1,094 agreement holders receiving £10.47M in payments, an average of £9,570 per scheme.

Countryside Stewardship payments: Cornwall

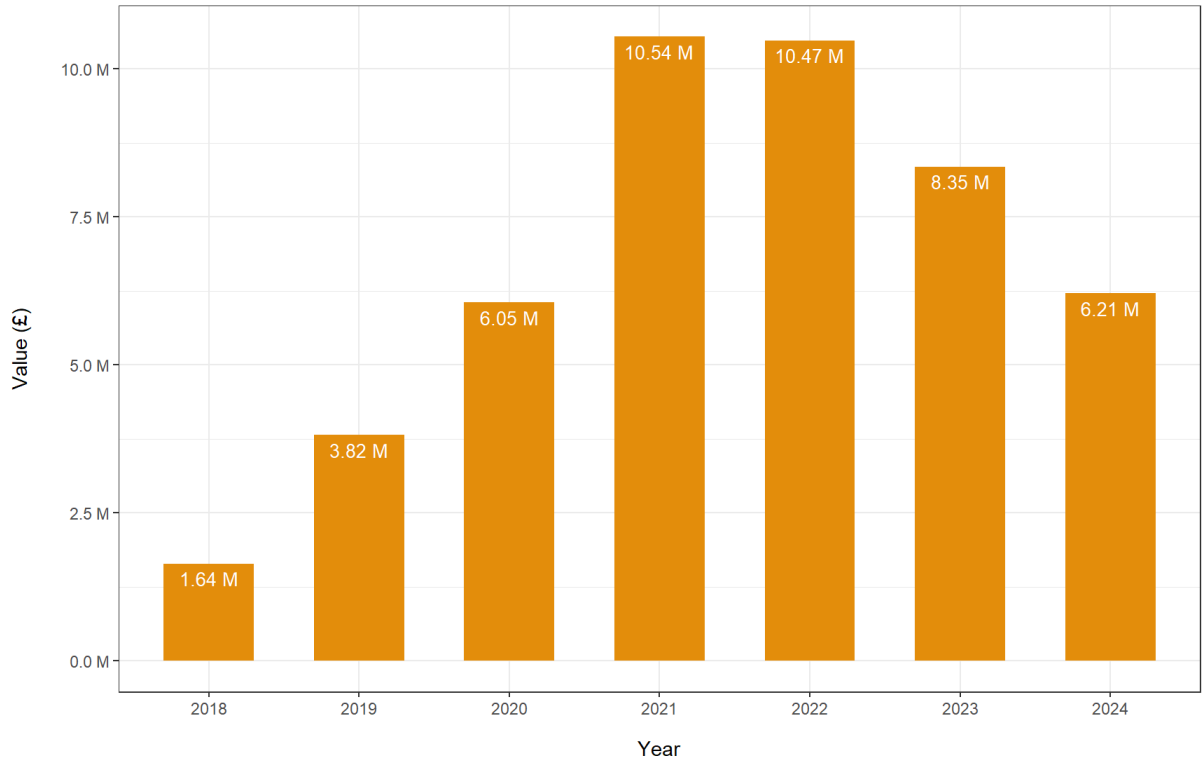
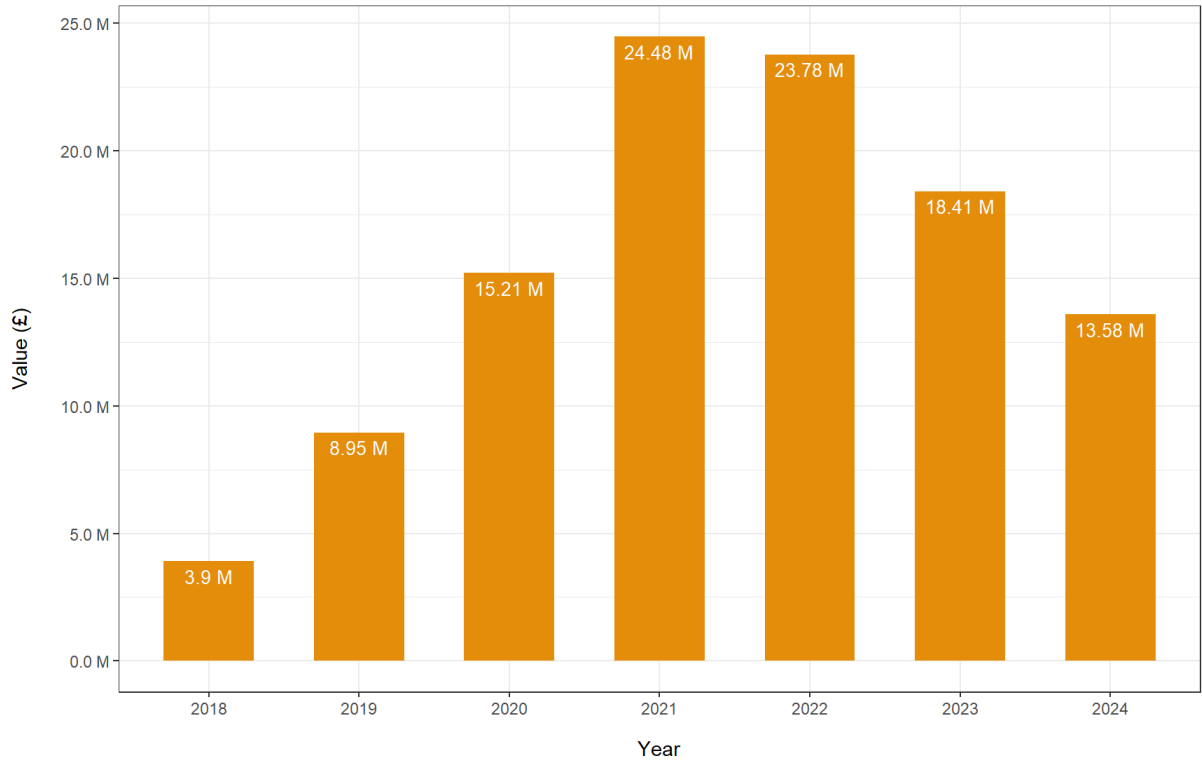
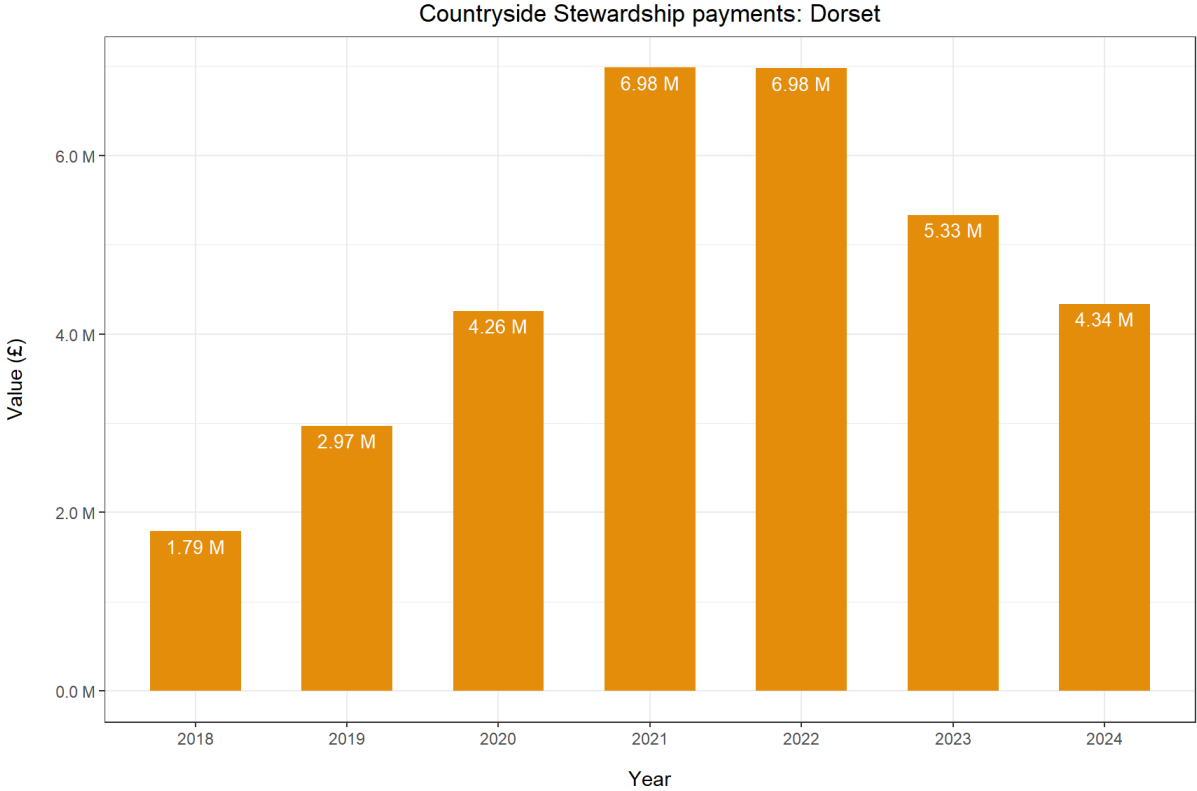


Figure for Cornwall Includes IoS

Countryside Stewardship payments: Devon



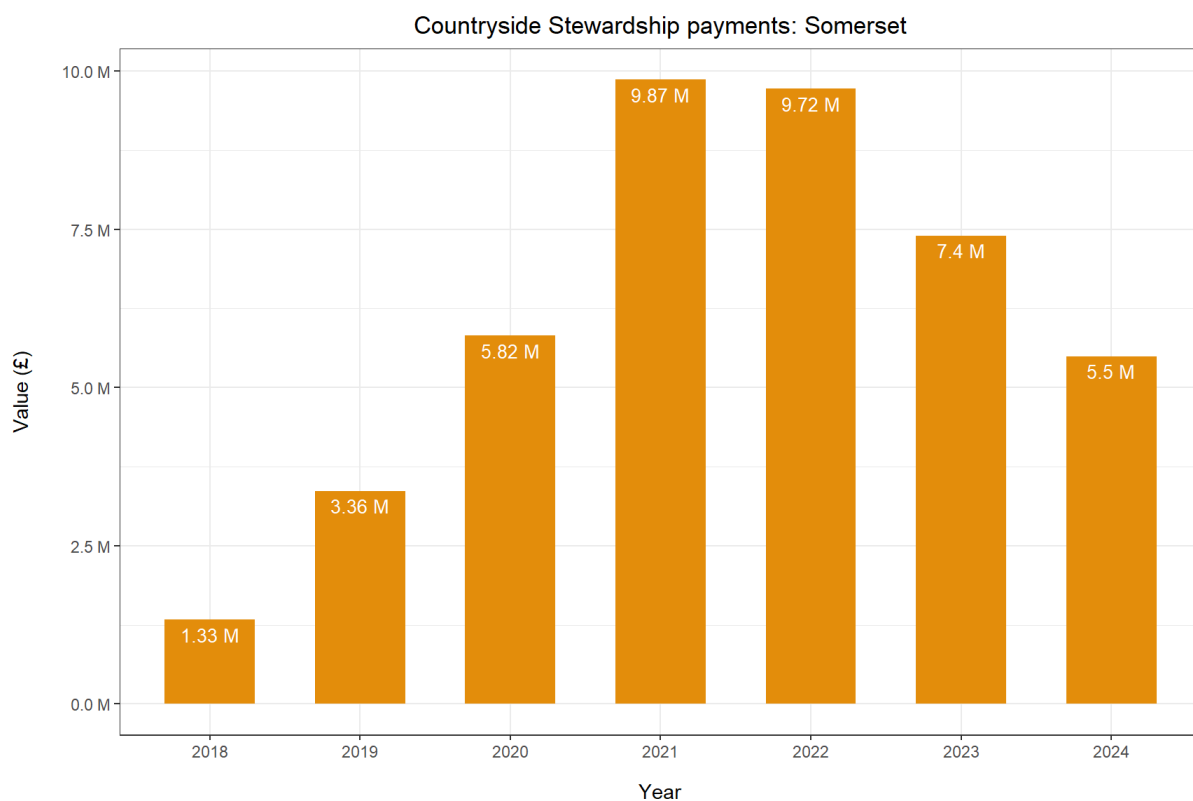
In the case of Devon, a similar pattern can be seen with the total payments coming into the county through this scheme increasing from 2018-2021 and small decline in 2022 as earlier schemes ended. In 2022 there were 2,704 agreement holders receiving £23.78M, an average per agreement of £8,794 per agreement.



The figure for Dorset shows that CS applications increased from 2018-2021/2 with projected payment in 2023-4 slightly lower but not including any agreement starting in these years. In 2022 there were 524 agreement holders receiving a total of £6.98M, an average of £13,320 per agreement.

The figure for Somerset shows that CS applications increased from 2018-2021/2 with projected payment in 2023-4 slightly lower but not including any agreement starting in these years. In 2022 there were 1096 agreement holders receiving a total of £9.72M, an average of £8,869 per agreement.

The average amount per agreement is comparable between ES and CS but fluctuates between the four counties. Given the individual nature of these agreements there is little value in interrogating this data further, but the relatively strong similarity in the figures, at around £10k per agreement, is reassuring for further analysis.



The situation in the two national parks is similar. In Exmoor the 2018/9 figures for ES are £3.22 and this declines to £2.17M in 2022 and £1.54M in 2024. There was very little CS in Exmoor in 2018, £0.2M, but this increased markedly to £2.73M in 2021 and £2.62M in 2022. The total amount received in AES payments in 2022 was £4.79M.

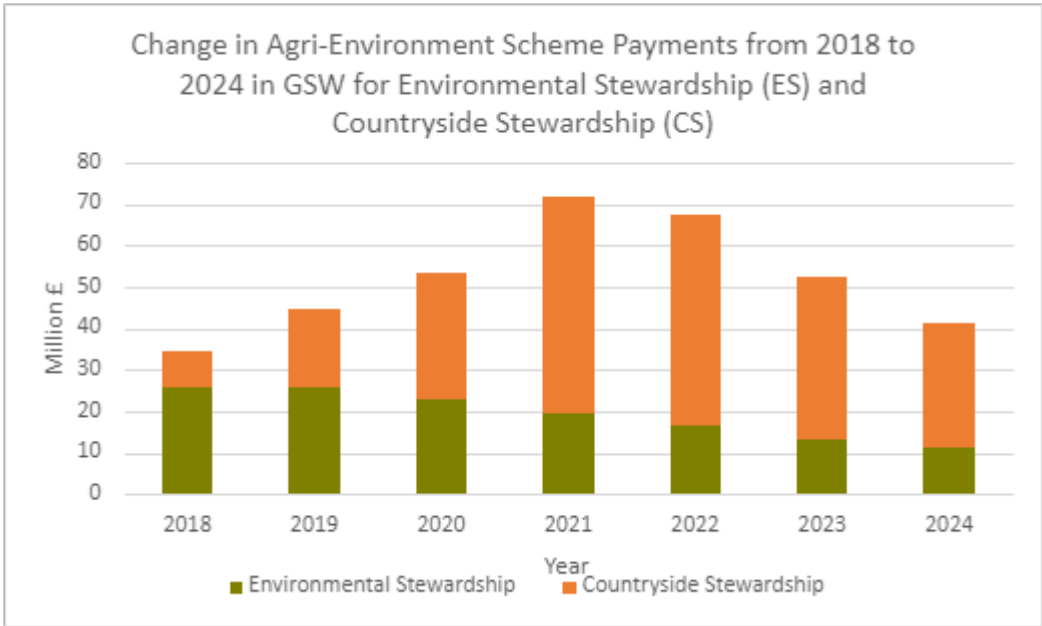
For Dartmoor the ES figures are £5.01M in 2018/9, £3.33M in 2022 and declining to £2.57M in 2024. Like Exmoor the CS figures for CS were low at £0.22M rising to £1.99M in 2021 and £1.85M in 2022. The total amount received in AES payments in 2022 was £5.18M.

There are some interesting comparisons when comparing the AES payments and BPS between the two national parks. Both receive about £5M a year, contrasting with the higher amount of BPS received by Dartmoor (£11.2M) compared to Exmoor (£8.7M). The other interesting point is that the AES makes up about a third of the total support payments coming into the national parks. In the rest of the GSW area the BPS will be a much higher proportion of total support, closer to the 85%:15% split of the Pillar 1 and Pillar 2 divide at the all-England level.

Comparing ES, CS and proportion in AES across GSW

In order to receive an accurate picture of AES in each county/LEP area and across the GSW, we need to add the figures together for both ES and CS. We can map this from 2018-2022 in order to see the changes in overall payments received. From 2023 onwards would be a minimum projection, assuming that no-one joins in the next 2 years, which is unlikely.

The figure below shows the total amount received from ES and CS together as this is the same in 2018/9 and increases until 2021, falling slightly to 2022. The numbers in 2023 and 2024 are likely to rise given that there will be new applications, and based on the increases in 2021 there is a strong base to build on. The proportion of ES and CS changes over time for each county with ES reducing and CS increasing.



As a proportion of total payments CS becomes more important than ES from 2020 onwards. There is a marked increase in payments arising from CS in 2021, almost doubling across the GSW area, and more than doubling in Cornwall. This increase is sustained in 2022 but that may be due to a number of factors, such as new agreements not being on the system at the time the data was generated [technically CS has a single start date of January 1st but some agreements will still be in the system]. The key reading from this data is that applications into AES are rising, most likely as a result of reductions in BPS becoming a reality.

County	AES	2018	2019	2020	2021	2022	2023	2024
Cornwall*	ES	4.71	4.71	4.02	3.56	3.08	2.15	1.85
	CS	1.64	3.52	5.05	10.54	10.47	8.35	6.21
Devon	ES	11.01	11.01	9.95	8.45	7.23	5.9	5.06
	CS	3.9	8.95	15.21	24.48	23.78	18.41	13.58
Dorset	ES	3.79	3.79	3.53	2.99	2.20	1.67	1.43
	CS	1.79	2.97	4.26	6.98	6.98	5.33	4.34
Somerset	ES	6.49	6.49	5.59	4.70	4.16	3.47	3.14
	CS	1.33	3.36	5.82	9.87	9.72	7.40	5.5
GSW	ES	26.0	26.0	23.09	19.70	16.67	13.19	11.48
	CS	8.66	18.8	30.34	51.87	50.95	39.49	29.63
Total	Both	34.66	44.8	53.43	71.57	67.72	52.68	41.11

*Includes IoS

In order to assess the potential of AES within the GSW, it is possible to identify the number of agreement holders in 2022 and compare this figure with the number claiming BPS in 2020. These figures were used in the above calculations, the number of BPS claimants remains quite static so the difference over 2 years should be minimal. This will reveal an estimate of the number who could potentially join CS this year or in 2023, and thereafter ELM, when that becomes fully operational.

Table 8: Comparison of number in AES and those claiming BPS (n of claimants)

County	ES	CS	Total AES	Claiming BPS	% not in AES
Cornwall*	285	1,094	1,379	3,854	64
Devon	557	2,704	3,261	7,794	58
Dorset	207	524	731	1,800	59
Somerset	566	1,096	1,662	4,277	61
GSW	1,615	5,418	7,033	17,725	60
England	10,552	23,761	34,313	83,889	59

*Includes IoS

The table shows that just over a third of eligible land managers in the GSW area are in AES. Devon has the highest proportion in AES with 42% and Cornwall and the IoS the lowest at 36%. Due to a drop in funding for AES there was an expectation that participation would fall from a high of 70% in 2013 to around 35-40% in 2020, and National figures confirm the level in 2022 to be 40%. This suggests that there is scope in the GSW area as across England for more farms to enter into AES or ELMS agreements as a response to the loss of BPS. The increases in CS applications across the GSW in 2021 suggest this is happening already. The ambition of 70% of eligible land managers being involved in schemes is also the stated ambition for the SFI scheme, which we will look at in the next section. It is anticipated that a number of the small holdings claiming BPS will fall as they will not enter SFI or ELMS, this would further reduce the 'available market' for CS and schemes under ELMS.

3.2 Changes in rules within ELMS and possible impact and other factors

In this section aspects of the new opportunities under ELMS will be reviewed and assessed in order to determine how the adjustment from BPS to SFI might play out. What is clear is that soils will be treated differently under ELMS than they have been in BPS and AES, the main change is that positive changes in soil management will be funded.

Under BPS there were some basic requirements under *cross compliance*, the term used to describe the regulations that claimants need to follow in order to legitimately receive the payments. These includes dates for earliest and latest dates for application of organic manure and trimming hedges and trees as well as gathering livestock inventories and recording water abstraction readings.

The Sustainable Farming Incentive (SFI) will introduce new rules and regulations with three levels under each standard, introductory, intermediate and advanced. So far only introductory and intermediate details are available for the three standards introduced in 2022. From these we might be able to gauge the way in which the rules might differ from those under cross compliance.

Under the improved grassland soils (IGS) standard introductory level, the requirements at the basic level will include:

- a minimum sward height (to encourage insects and other fauna),
- field margins to be left uncut,
- historic features to be under permanent grass,
- a nutrient management plan, and
- small areas to be taken out of cutting and grazing management.

Anderson (2021) undertook a detailed examination of the rules associated with the three SFI standards when they were launched. Some of the key points are:

- Applicants for the SFI must be current BPS claimants;
- SFI agreements will last for 3 years;
- Land must be under the 'management control' of the applicant. This is taken to be the tenant, under let situations. There will be no requirement for tenants to gain landlord's permission to enter the SFI. Where a tenancy has less than 2 years to run this land will not be allowed in the SFI. As a transitional measure, land with 2-3 years remaining on its lease will be allowed in;
- Payment levels will be fixed for the three-year period at the prevailing level when the agreement starts. They may be adjusted subsequently as more experience of the scheme develops.
- Payment will be quarterly in arrears, so more frequently than current schemes, which pay annually

- The SFI will operate on a land-parcel basis. Standards can be signed up for on a field-by-field basis rather than the whole farm having to be entered. This suggests that different fields can have different ambition levels under the same Standard;
- Land already in Countryside Stewardship (or other existing schemes like ES) can also be entered into the SFI as long as the prescriptions do not overlap or conflict. Andersons suggest this is unlikely for the Soils Standards as they are asking for different actions than CS.
- There will be a 12 monthly review of agreements at which point more land can be added, additional standards incorporated or the ambition level within standards raised.
- During the 3-year agreement farmers will only be able to reduce ambition levels or coverage in exceptional circumstances – essentially meaning that flexibility in agreements is only one way;
- Common land can be entered into the SFI through group agreements. A ‘single entity’, such as a Commons Association, will be required to submit the application;

Applications for the three outlined SFI standards will open with in 2022. The precise timing is not clear but given the statement from Defra that it would like to ‘make the first SFI payments before the end of the year’ this seems to indicate SFI applications after May 2022. Suggestions are that in the future, probably from 2024 onwards, applications will be possible on a yearly basis.

While not yet in operation, Defra are seeking views on the advanced level possibly containing rules about maintaining higher sward heights over a wider area, introducing a greater variety of herbs into pastures, carrying out detailed soil mapping, and using precision fertiliser and manure spreading machinery to maximise effective use of these inputs. The suggested level of payments for the advanced level were £60/ha for the A&HS and £70/ha for IGS but these might change and have not been used in any calculations. While it has been accepted that the level of activity required to receive the BPS payments was low, it needs to be understood that there will be costs linked to the delivery of the SFI payments and these will be highest in the advanced level of the standard.

The situation for tenants has been a particular source of concern (see Tenant Farmers Association website). As noted above SFI agreements are for 3 years and there is no need to seek agreement from a landlord before entering the scheme. The inclusion of soils here is important, especially in short-term land tenure arrangements where the farming relationship with soil is perhaps the most potentially extractive. The situation for other aspects of the ELMS programme will be different and seems likely to follow more traditional routes in terms of the length of agreements and the need for prior landlord’s permission before a tenant can enter an agreement.

Blended finance is something that Defra have alluded to in a number of consultations and announcements without offering any specific examples. In a recent clarification during a Q&A session covering the ELMS schemes, Defra indicated that land entered into the SFI can be used for biodiversity offsets or other private agreements. They indicated that the ‘points gained under SFI’ can be used as credits offered under proposed Biodiversity Net Gain (BNG) agreements for something similar. This is essentially ‘stacking’ the payments from the

BNG agreement on top of the payments received from SFI, assessed under the future pathways section in 4.2.

One rule that has been introduced is the ability from 2022 for land managers to sell off their BPS entitlements for a lump sum payment. It was outlined in 2021 with the explanation that it would help farmers who wish to exit the sector but can't, due to lack of finance, and as a result free up land for new entrants and existing farmers who wish to expand. It has long been recognised that very little land is purchased by new entrants due to the high price that agricultural land commands.

3.3 Review of SFI and other Defra funded interim transition support

Initial estimates of potential income from SFI across GSW

Looking in more detail at the SFI option in more detail: initial estimates of the potential income this would bring to the GSW area requires us to link back to the Corine Land Cover (CLC) figures.

The three options that are available under SFI are:

- the Arable and Horticultural Soils (A&HS) introductory and intermediate levels
- the Improved Grassland Soils (IGS) introductory and intermediate levels
- the Moorland and Rough Grazing (M&RG) introductory level

The corresponding CLC categories that would be potentially eligible for these options are:

- Non-irrigated arable land
- Pastures
- Moorland and heathlands

The correspondence between these categories and the SFI options are not precise and it cannot be assumed that all such land would enter, but we can use their extent to indicate the potential level of funding which the current SFI options could bring into the GSW area. Defra have stated (2022) that they are aiming for 70% take up for SFI, so we assume 70% uptake for each of the three categories, while the proportion of these areas opting for the introductory or intermediate levels cannot be known, so we offer two possible splits – all land in introductory level only, or an equal split between levels for the options that offer the two. The calculations are set out for the whole GSW area.

The table shows that by assuming all arable and horticulture areas are eligible for the A&HS standard and the 70% target is met, this raises over £9M in the GSW area. For the IGS standard the total is over £13M. Adding the M&RG standard the total is over £22.5M. If half the area in A&HS and IGS is in the intermediate tier, the total rises to £33.7M.

- This represents only 14% of the £242M that came into the GSW area through BPS, in 2020. Even if all land went into the intermediate tier, the amount would be less than 20% of current BPS income to GSW farms.

Table 7 estimating potential income to GSW area from 2022 SFI standards

SFI category	CLC category	GSW area (ha)	70% of CLC category (ha)	All in SFI Introductory (£)	50:50 SFI introductory: intermediate (£)
Arable and Horticultural Soils	Non-irrigated arable land	603,576.6	422,503.6	9,295,079.2	13,097,611.6
Improved Grassland Soils	Pastures	676,345.9	473,442.1	13,256,378.8	20,358,010.3
Moorland and Rough Grazing*	Moorland and heathlands	56,938	39,856.7	410,524.0	410,524.0**
	Total	1,336,860.5	935,802.4	22,961,982	33,712,679.6

* the calculations are for the hectare payments only, excluding the £265 per agreement and common land supplement

** no intermediate level available until 2024, so the figure is entirely introductory.

Given the wide range of permutations, it would seem sensible to outline a range of outcomes for the period 2024-28 across the 3 standards (A&HS, IGS and M&RG). These have been calculated using the straight line increase to the 2028 take-up figure from when the SFI scheme opens during 2024 and based on the payment levels outline in Section 2.

- **Low SFI outcome** (only 50% take-up by 2028)
 - Assuming even take-up at introductory standards = £31.5M by 2028
- **Medium SFI outcome** (meets Defra take-up target 70% by 2028)
 - Assuming even take-up to 70 and 50% at intermediate standard = £67.4M by 2028
- **High SFI take-up outcome** (meets Defra take-up target 70% before 2028)
 - Assuming quick take-up to 70 and 75% at intermediate standard = £96.75M by 2028.

There are many caveats to these figures as they are based only on the payment rates for the three standards currently available and excludes those standards that will become available in coming years. These figures broadly match the expectations in the commercial land agency sector, which anticipate current rates of SFI will bring around 10-30% of former BPS payment returns to farmers and land managers, depending on the selected level (Strutt & Parker 2021).

Clearly more standards are coming on stream in 2023-24 and the Advanced tier payments might offer higher levels of remuneration. Early AHDB estimation suggests that if farms were to maximise the use of SFI and go for advanced in all available standards, this might enable them to recoup about 2/3 of the funds previously received through BPS (AHDB 2021). However, as mentioned earlier there will be additional cost to farmers for delivering SFI, when compared to BPS, because of the activities that SFI requires before payment can be claimed.

3.4 How far will AES and ELM bridge the gap left by BPS in the GSW

To conclude this section, we bring together the figures from the AES section and the initial thoughts on what SFI could contribute towards farming incomes in the GSW. These calculations will be undertaken at the whole GSW area level, as the assumptions required mean that it would not be robust to move to lower resolution spatial estimates.

The previous section highlighted the government's target of 70% take up of existing SFI options by 2028, which might bring in between £22-33M a year. In 2022, with 40% of land managers involved in AES the area received close to £70M in AES payments.

The impact of future SFI standards and the advanced level tier within the three existing standards will obviously be a further key consideration. However, at the current moment it is not possible to estimate what contribution they will make, and whether land managers will find them attractive and workable. The ones that will be particularly GSW relevant would be :

- nutrient management (2023) – important due to the high number of livestock in the GSW region
- hedgerows (2023) – a key landscape feature across the GSW
- low and no input grassland (2024) – extensive even outside the national parks
- moorland and rough grazing (2024) – central to Bodmin, Dartmoor and Exmoor
- water body buffering – important across GSW, with increasingly wet winters

We know that the total annual budget for ELM in 2024 will be slightly smaller than that for BPS in 2020 (because the same money is also funding new productivity and other schemes, in parallel), a conservative estimate could be that the total payment from SFI to GSW farms might total around £100M covering all the eligible SFI standards. AHDB estimate that at the very best a holding might be able to secure 2/3 of the BPS monies through the Advanced standards of the SFI (AHDB 2021). This remains some way short of the £243M that was coming into GSW through BPS in 2020.

For increased AES and Local Nature Recovery to fill this gap would be a major increase in the ambition for AES. The £70M that came into GSW from AES in 2021 was in addition to £243M from BPS. LNR would need to increase not just the number of scheme claimants but also the total amount claimed, by a significant amount.

- If *all* eligible land managers in GSW were in AES, with an average payment of perhaps £10,000 per farm this would generate a revenue of £177M to the GSW (just £100M more than GSW receives currently from AES),
- while if 70% of farms were involved it would only generate £124M – increasing the revenue by only £50M compared to the current AES.

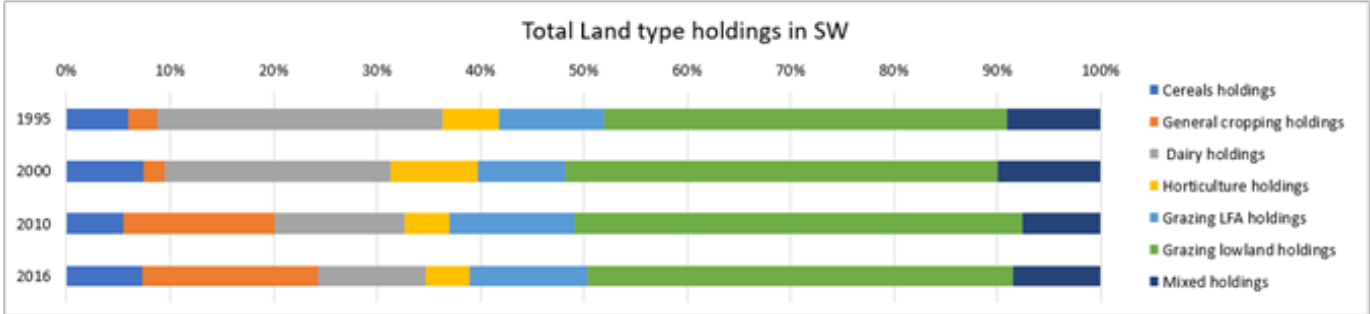
Therefore the average size of agreement would need to increase significantly in order to help replace BPS losses to the GSW. For this to happen, LNR would need to be much larger and more attractive than the current CS scheme, both in terms of its appeal to potential agreement holders and the construction of the management options.

4. Potential impacts, challenges and opportunities arising from the agricultural transition in the South West

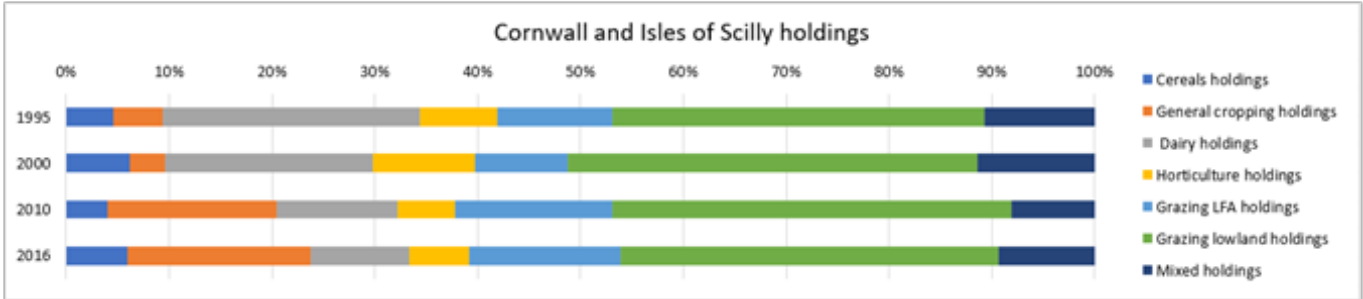
4.1 Analysis of survey data for the GSW area, to consider trends in farming structures

In this section we assess changes in farm structures across the South West area and within each county between 1995 and 2016, using Defra June survey statistics. The exercise is challenging as a result of significant changes in the way these data have been reported over the time period, including changes in category definitions (e.g. what counts as a farm holding) and in the original source of the information (e.g. a sample-based survey, or extrapolation from IACS records).

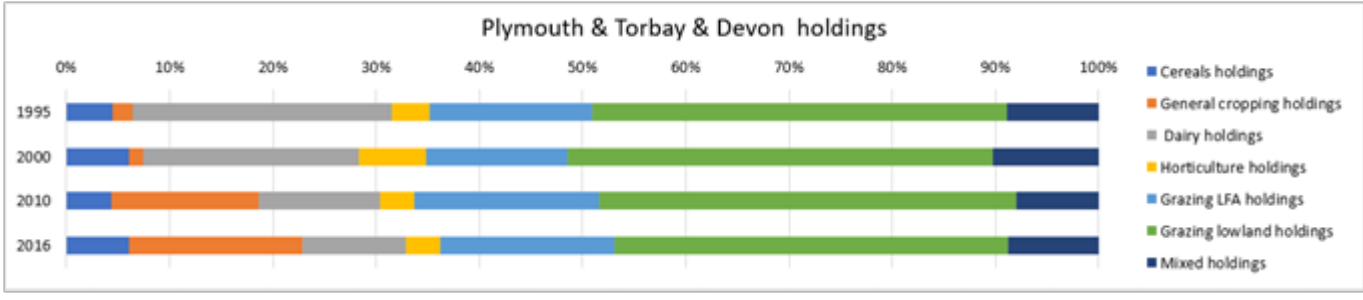
Overall in the South West area the major changes in types of farm holding are a decline in the proportion of dairy holdings and an increase in the share of general cropping holdings, within a declining total number of holdings. All other farm types remained broadly stable in share, over the period. It is possible that there is a connection between the decline in number of dairy holdings and the rise in those categorised as general cropping. General cropping covers ‘holdings where arable crops account for more than two thirds of standard output’ but which are not classified as specialist cereal holdings (Defra 2011) these businesses could include forage cropping and breeding young livestock to supply larger dairy holdings. When a holding decides to exit dairy production it is likely that cultivated crops alongside some livestock will be its main outputs, thus it would move into the ‘general cropping’ or ‘mixed’ holding categories. However, as levels of dairy production (in herd size around 0.8 million, and in milk output) from the GSW area have remained the same, this means that while there are fewer, larger specialist dairy holdings the GSW remains nationally important in terms of overall dairy production.



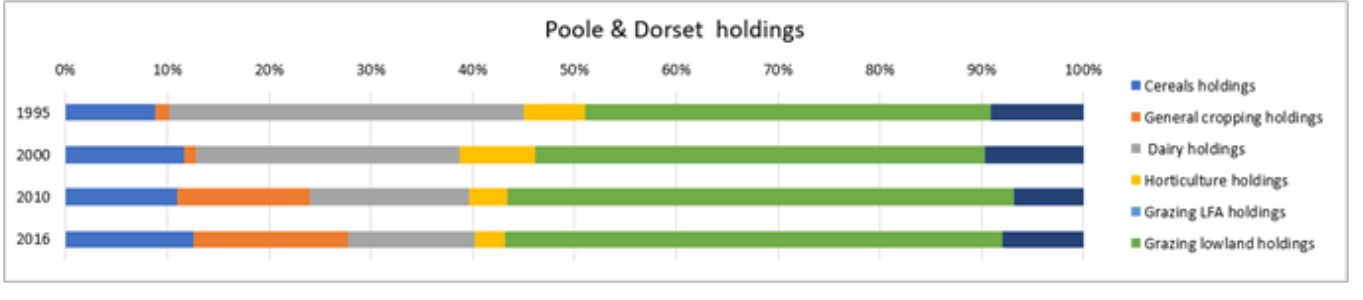
Looking at Cornwall first, it shows that the share of dairy holdings reduced between 1995 (25%) and 2016 (under 10%) until they were about a third of the total number of holdings but noting that production levels have remained the same. General cropping grew from 6% in 1995 to about 20% in 2016. All other categories retain similar share throughout the period.



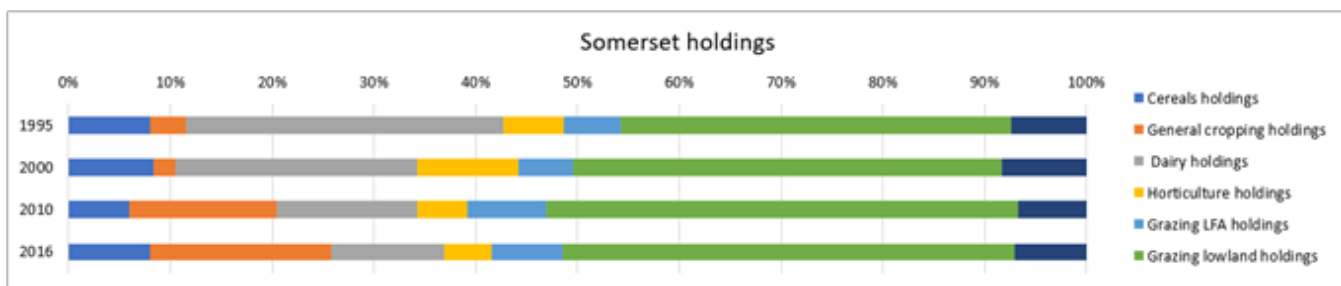
A similar picture is seen in Devon with dairy holdings reducing from 25% in 1995 to 10% in 2016. The general cropping category grew from under 5% in 1995 to over 15% in 2016. There was little other variation in share, although the figures suggest that the total number of holdings declined for all sectors.



For Dorset the drop in share of dairy holdings is also very marked accounting for 35% of holdings in 1995 but only 13% by 2016. As in the other counties general cropping increased as a proportion from 2% in 1995 to 15% in 2016. In Dorset there was also a slight increase in the share of cereal farms from 8% to 13% and in lowland grazing farms from 40% to 48%, with a decline in the share of horticulture holdings.

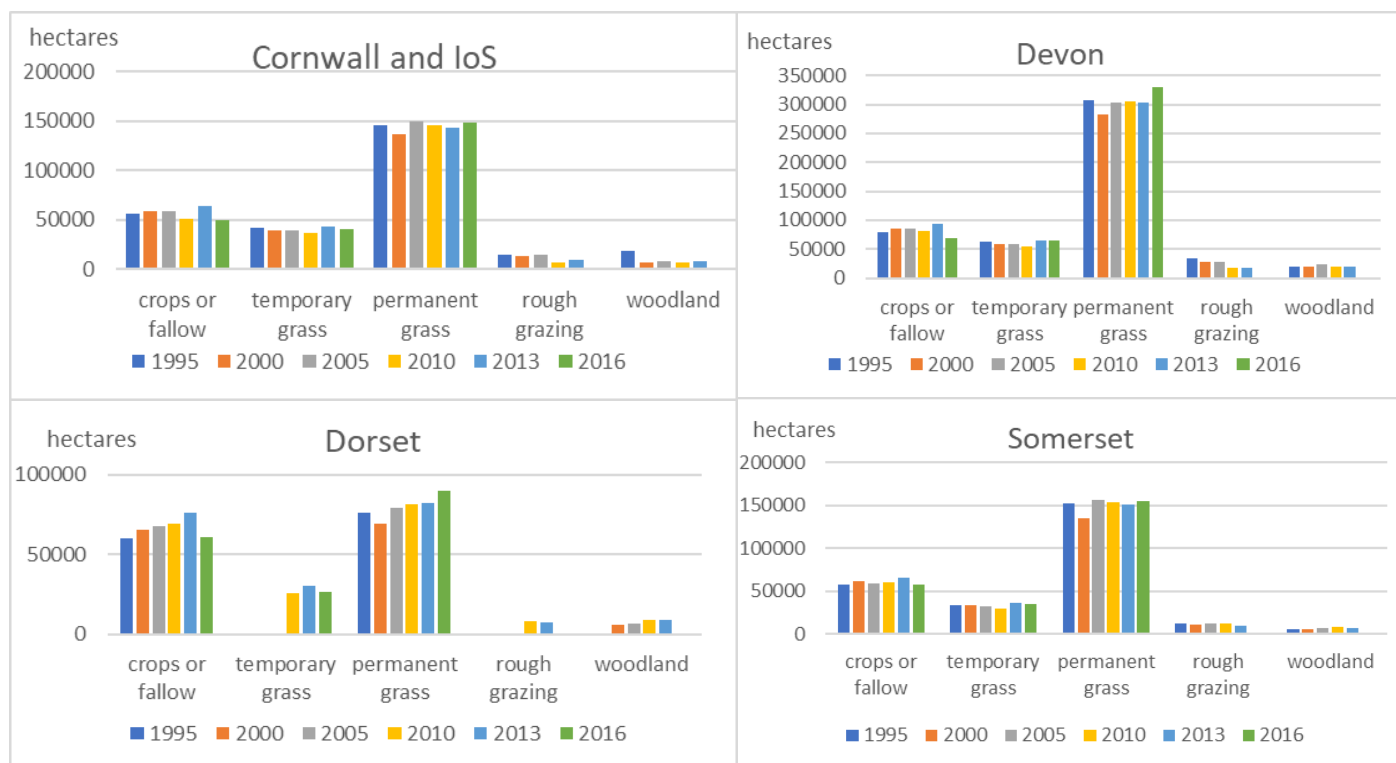


Finally, in Somerset the same picture is repeated with dairy reducing from 30% in 1995 to 10% in 2016 and general cropping growing from 4% in 1995 to 18% in 2016. The only other change was a growth of 5% in the share of lowland grazing holdings.



The consistent message across the GSW area is a reduction in the total number of farm holdings of all types, but within this, a pattern of greater concentration (more marked reduction) in the dairy sector, and less reduction (meaning a growing share) in general cropping farms. However, the lowland grazing category remains the most widespread share of total holdings at around 40% and both upland and lowland grazing livestock (sheep and beef) holdings combined account for 50 – 60% of the total holdings in each county.

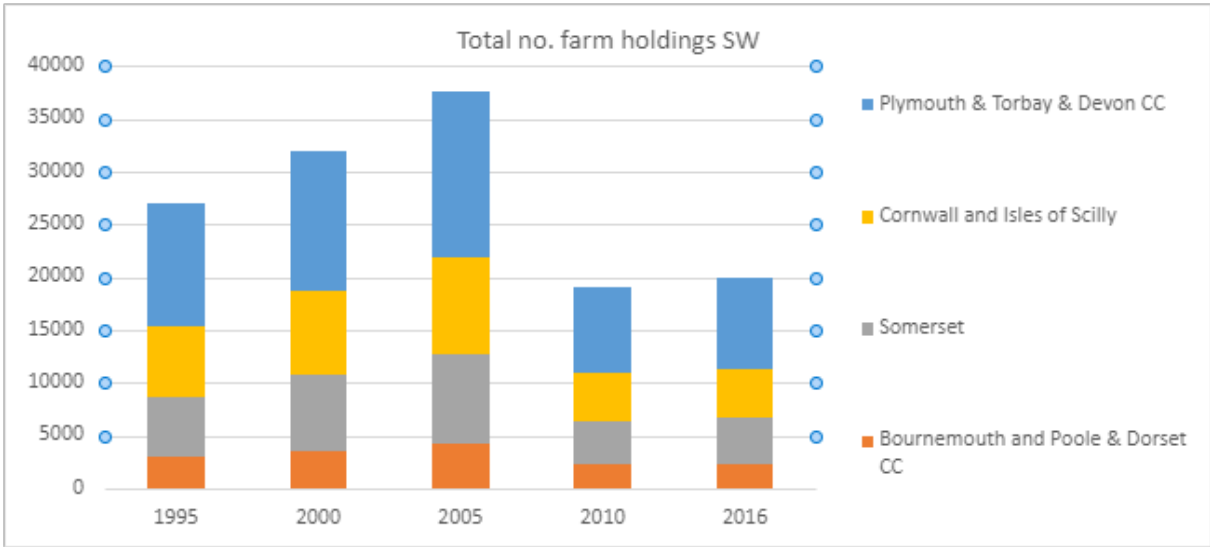
The next series of charts look at land use on farms in each of the GSW areas between 1995-2016. This is relevant as it will indicate if the change in the type of holdings seen in the previous series of tables is mirrored by a change in land use. The source of data is also the Defra June Surveys, any missing data points are due to unreported/unpublished values in some years.



The four charts illustrate that permanent pasture for grazing livestock is the dominant feature in the GSW area, although arable land (crops and temporary grassland combined) is almost as common as permanent grass in Dorset. Arable and woodland areas in Dorset were

expanding steadily for most of the period, while they were steady or declining in the other counties. There is a slight indication of reducing rough grazing area, usually associated with extensive livestock (sheep and suckler cows), over the period, in most counties. Notably, the lack of a significant increase in cropped area suggests that the farm type changes reported (towards 'general cropping' and away from 'specialist dairy') has not caused significant changes in land use.

The change in the number of farm holdings is shown in the table below. There is a marked change between 2005 and 2010, but this is, we think, at least partly due to a change in definitions. This overshadows any farm enlargement that might have taken place. In 2010 a minimum size was introduced for BPS claims of 5 hectares of eligible area and this reduced the number of holdings in the GSW area from about 37,000 in 2005 to 19,000 in 2010.



The total number of claimants in 2020 for BPS according the earlier analysis was 17,725, which is close to the 20,000 holdings recorded in 2016, according to Defra statistics. The other factor underpinning this change is increased concentration of agricultural land in fewer land owners and managers shown by the FADN data. The number of holdings 100ha or more has grown and the average size of farms has increased by 20ha in Dorset and by between 14-16ha in Cornwall and the IoS, Devon and Somerset. This supports a general finding across England that there has been a concentration of the industry towards fewer, larger viable agricultural holdings: a trend that is reflected across England, with a corresponding increase in the number of small holdings that are not primarily used for agriculture. The total area farmed has only changed by between 1-4% over the same time period.

The amount of labour in the farming sector has reduced by a lesser amount than the reduction in holding numbers (between 20 to 24%, on all areas). The industry is still dominated by family labour which represents 60-70% of farm labour, the rate of reduction in family labour is half the rate for all labour. The FTE amount of part-time family labour has increased significantly, and the contribution of casual workers has almost disappeared, with most non-family work now undertaken by contractors. The rate of decline in farm labour force has reduced since 2010. Salaried labour still represents a minority of the workforce and its

share has decreased in all areas except Cornwall and the IoS. Devon is the least reliant on salaried labour while in Dorset and Somerset it accounts for 36 to 38% of their agricultural workforce and in Cornwall and the IoS it stands at 32% (including horticultural workers).

Looking at livestock numbers and types, there has been a notable reduction in cattle and calf numbers (about 17% over 20 years). In terms of dairy herds, we can see that Dorset and Somerset have seen the largest declines (over 30%) compared to Devon and Cornwall (23%). Dairy herd reductions took place mostly before 2010 but production levels have remained level, resulting in fewer but higher-yielding herds. The number of breeding ewes has dropped by 20% in Cornwall, Devon and Somerset, but remained the same in Dorset.

Overall, the numbers show a contraction in livestock farming activity, but an increase in per animal, holding and worker productivity. This suggests that a lower number of animals are resulting in similar or even higher output, notably in the dairy sector. The analysis of data from 1995 to 2016 has highlighted that dairy holdings have reduced by about half over the time period, however land use has remained largely stable with similar levels of permanent grassland over the time period. As a result, dairy and livestock production generally retain a dominant status in terms of land area meaning dairy remains economically important across the GSW area. Wider issues concerning the future of the red meat and dairy markets are not considered by this report but are pertinent as consumer choices change. The move away from red meat shows little sign of reducing as does the shift towards higher quality and more traceability, and recent and future trade deals will offer both threats and opportunities.

4.2 Extrapolating potential pathways to 2030

Preparing any pathway from 2022 towards 2030 is a very unpredictable exercise given the amount of change. As noted earlier this is the largest change in agriculture and land management since the end of WWII. Recent NFU research (2022) shows that farmers are concerned by input prices (87%), phasing out of BPS (75%), regulations and legislation (72%) and introduction of new government support schemes (54%). For the respondents to be more confident the most mentioned factor was 'a government strategy to avoid being under-cut by imports with lower standards' (87%) and an increase in outputs process (87%). The most common route out of the period were to: engage with ELM (68%); invest in productivity (55%); diversification (50%) and reduce active farming (25%). All of this points to wide spread change across the sector and the GSW area. This section considers the different pathways that would be taken by farmers and land managers.

The Institute for Public Policy Research (IPPR) called for a 'inclusive and ambitious environmental schemes' with a 'trusted regulatory floor' and 'support for transition' (Nyman, Plummer and Murphy 2022). Within this they express concern that the ambitions of the 25 Year Environment Plan will not be met because of 'siloes working, lacking the necessary coordination to strategically deliver net zero and the recovery of nature'.

The IPPR see that the bulk of the effort and funding being directed towards SFI, which if too attractive to farmers will not bring about the change required to meet the climate and nature

crises, but if not attractive enough will have the same impact through non-participation. In this sense they see true co-design as being key followed by investment in facilitated peer-to-peer farming networks to support the rollout of advice.

As the Efra Committee commented at the end of 2021 (Efra Committee 2021) there remains considerable uncertainty regarding how the 7 year transition will impact English farming. It is thought some farmers will respond by implementing less environmentally sustainable methods to make up for lost income. The number leaving the sector is unclear as well as those will go out of business. Farmers are not able to plan as the details regarding LMs are not clear but the impact of BPS reductions is now being felt. The report highlights the impact as being greatest on upland, tenant and common land farmers. All of which are common throughout the GSW area.

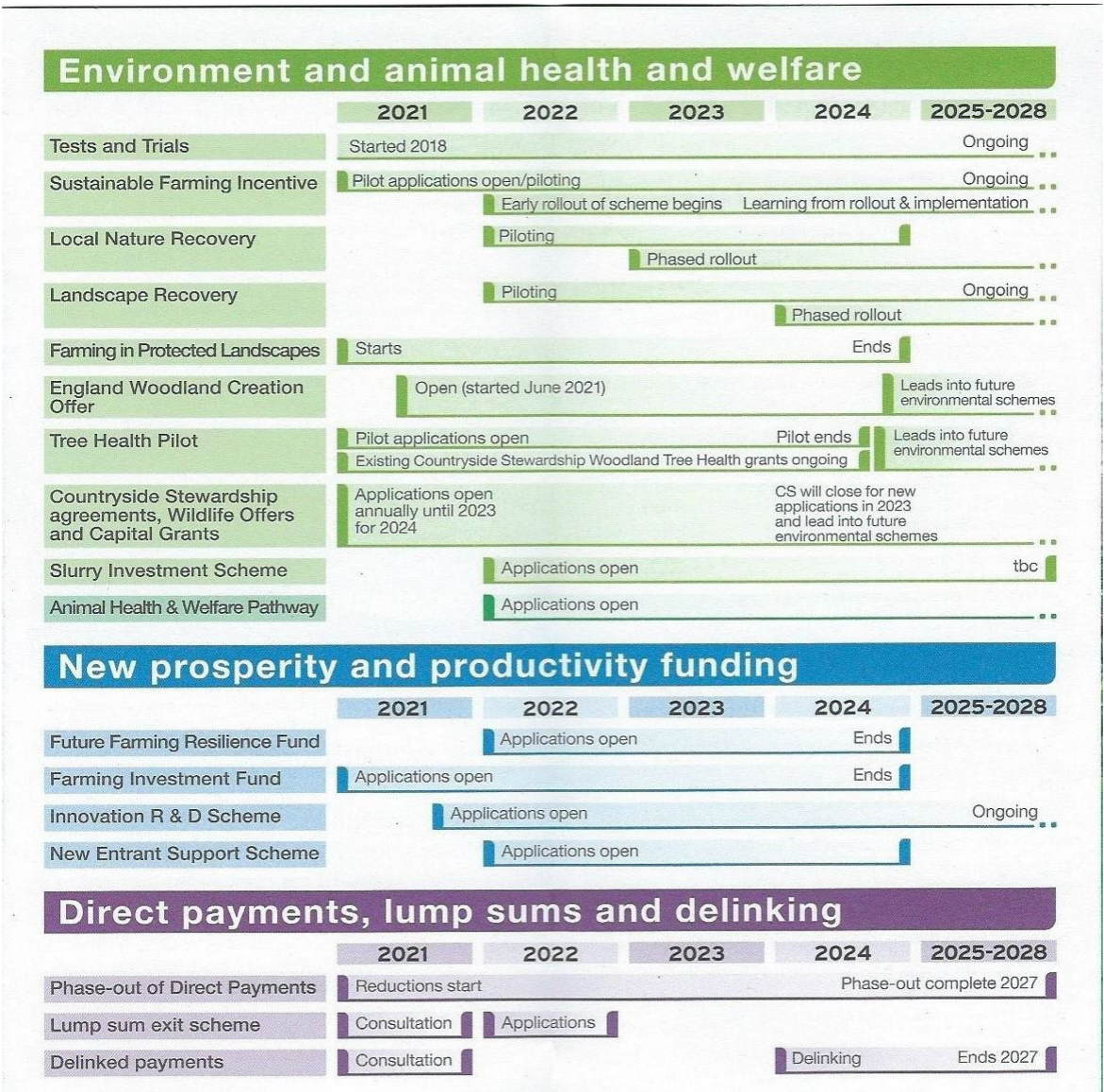
There have been a number of commentaries on what the future outlook might look like, Strutt & Parker (2021) have identified a number of themes that will be driving change in the rural economy. Given the GSW area is predominately rural these are particularly pertinent. The reduction of BPS is the focus of the report, but the implications of this will be increasingly felt across the region. While higher product prices across all sectors may help mask this for now current input prices are also cutting deep into any profits in agriculture at the current time. Given the importance of the dairy sector it is interesting to note the outputs from an international study into the attractiveness of this profession (Bedoin et al 2022). A core finding is a widespread concern for the future of the sector in all major producing countries with key factors being the average of farmers, the capital investment required alongside the long working hours

NICRE has been involved with the State of Rural Enterprise (SORE) report looking at the impacts of Covid-19 pandemic on farms' performance: experiences and resilience. In the South West 200 farms were surveyed with over half in the livestock sector. For most turnover had stayed the same. Horticulture had seen the most marked increase in turnover. Over half (58%) had reduced employment and this was true of all sectors. The most pressing obstacles to the success of the business was regulations and red/tape (71%), although these are not defined. No other response received over 40% of responses with a group of 6 between 33-37% covering: Brexit; Liquidity or cashflow; market competition; finding the right skills; Covid economic uncertainty; and taxation. In the SW 40% felt Covid had had no impact, 28% a mixed impact and 18% mainly negative. Disruption to supplies (75%) and reduction in sales/income (58%) were the most noted negative impacts from Brexit. Positive impacts were increased sales (50%) and improved cashflow (42%). Just over half of those in the SW had accessed government support during Covid, shared across all sectors but most notable in the 20-49 ha size category. The Small Bounce Back Loan (45%) was the most likely to be accessed, probably to support cashflow. Only 25% accessed external support during the pandemic, but this rises to 57% of those in the 20-49 Ha category and 45% of those in the 'mixed' farming category.

The source of external support or advice was most likely to be an accountant (31%), twice the response for any other category, which was a bank (15%), business adviser (14%), business network or trade association (13%) and NFU (12%). Only a third (31%) of farmers in the SW have a business plan that they review at least annually with 59% not having a formal written plan. This is most likely on the farms under 20 ha. Larger farms (20-50+ ha)

are the most likely to have a formal written plan 50% and 69%). These farm businesses are talking steps to improve their financial position, most likely 'reducing or cancelling financial investment' (49%) or reducing fuel or energy usage (44%). On family farms the most likely response to the current challenges is 'family members to working longer hours' (76%) and 'using family money or resources' (74%).

Planning how the sector will respond to the complicated array of schemes being developed is far from easy. AHDB have estimated that there are at least 17 new schemes being planned (see figure below). The success of each of these will be a mixture of payment rates, overall image and acceptance of the objectives in the national press and for the farming system in question. As previously mentioned it is no surprise that the private sector, environmental, ancillary sector, farming Unions and other NGOs, are all offering insights and advice. In the response to such a deluge of information farmers and land managers will respond differently.



The future, whichever way it is viewed is challenging. The NFU confidence survey suggests that 96% of farmers want to 'maintain the viability of the business', 75% to have a good work life balance and 69% to keep the business similar to as it is now with a similar number (75%) expecting the number of employees to stay the same as they are now. This gives some indication as to how farmers will respond to the loss of BPS, by seeking to replace this revenue in order to maintain the viability of the business. For most farmers who are owner occupiers, their main asset is land and need this to maintain their business. However, once land comes on to the market data collected by the main land agents suggests about half is purchased by non-farming buyers, both life-style buyers and private investors who buy to generate a financial return. As yet there is no evidence that the BPS reductions are impacting confidence amongst buyers as the amount coming on to the market remains low and demand is strong. Farmland remains attractive as a store of wealth, a status symbol and, newly, as a natural capital investment.

So what are the new investment opportunities, other than ELMs? What is clear is that following the Environment Act there will be a renewed focus on environmental protection and enhancement, heightened by the increasing integration of approaches to tackle nature recovery and responding to the climate crisis. Farmers in England are already facing the tighter implementation of the Farming Rules for Water in a bid to prevent water pollution. This means they are facing significant changes to the way they store and spread manure, slurry, AD digestate or sewage sludge. In the NFU survey (2022) 92% of farmers expect to act in the next 3 years to reduce or mitigate greenhouse gas emissions.

Carbon trading is also very topical at the present moment with potential credits arising from woodland, peatland and soil. While it has to potential to be a new income stream there is a great deal of uncertainty, something akin to the 'wild west' according to one expert. Not only do land managers need to be clear how the carbon market works before they become involved, they also need to consider the long-term implications. For example, it is possible that holdings will need to retain carbon credits in order to themselves become carbon neutral, once credits are sold or linked to another business they can't be counted on for the 'home' holding as well. However, land provides an opportunity for tree planting and a move to rewilding the delivery of many ecosystem services. However, there is concern among farming representatives about the loss of productive farmland from such approaches and the impact this might have on food security and local communities.

The blended finance options outlined by Defra are based around 4 possible options, which are:

- *Area-based payments* with Defra paying for delivery on some parcels and private funding covering others.
- *Match funding* where Defra pays for a certain proportion of the costs and private funding the remaining amount
- *Intermediary model* where the project is divided into discrete elements and these are sold to Defra and other organisations
- *First / final Investor* where Defra take the lead with other investors joining later

The increasing move to electrify the economy and move away from gas and coal as the country aims to de-carbonise is another factor. This is likely to see another boost to the renewable energy sector with further interest in solar and possibly wind farm sites.

Increased energy costs are likely to lead to a greater focus on efficiencies and technological innovations to achieve this.

The Levelling Up agenda has been another national strategy that will impact rural areas, either directly or indirectly. NICRE undertook a review of the strategy (NICRE 2021) and updated it when the latest policy announcement was made in 2022 (NICRE 2022). The report concludes that 'Rural areas are often overlooked because their place-based potentials and interdependencies simply aren't evidenced, or visible to policy makers'. Future policies and investment programmes covering rural areas should be channelled through farming, food, or tourism sectors. The favoured approach would be to use existing networks such as the regional Farming and Rural Networks. This is particularly important when concerning carbon sensitive land management and new environmental markets. Here it is crucial for the long-term future of the GSW that the focus is on reaching a consensus on what works so that whatever money there is in the system is used as effectively as possible.

Finally, organisations such as the Food, Farming and Countryside Commission and Sustain are calling for the agricultural transition to be more strongly linked to a national food strategy, such as the National Food Strategy proposed in 2021 (Sustain 2022). While there is a need to consider food security, this should not be any loss of focus on the need to protect and enhance natural systems. Becoming less reliant on vulnerable supplies from overseas will sharpen the focus on sustainable approaches for the UK to enhance the capacity to produce while at the same time considering the need for approaches that are climate neutral or positive. Such a whole farm approach is crucial for the industry as a whole to assess how to use inputs more effectively and in an integrated way.

4.3 Implications and options for farming and the wider rural economy in the GSW

Summary of Key Points

What this report has set out in a general way across the GSW is the impact of BPS reductions, the current income to the area from AES and the potential of ELMs. This has been deliberate as it is not possible to look at these issues with any granular detail because of the data used and the sheer enormity of the challenge. However, individual farm businesses across the GSW will be doing exactly that. There are many factors that will impact such decisions. The key facts that this report has highlighted are:

- Total annual amount of BPS coming into GSW is £242.4M;
- Over the transition period this equates to a loss of £883.7M by the end of 2027;
- Current AES agreements bring in just under £70M in 2022 and this is rising;
- About 40% of farm businesses have an AES agreement, worth about £10,000 a year;
- Under the current three SFI standards a best guess suggest about £33M, or 14% of the annual BPS total, could be generated;
- A very rough estimate across all eligible SFI standards suggests about £100M could be claimed by the time BPS ends in 2027;

- To surpass existing AES amounts, LNR will need to both attract more farm businesses and secure activities that exceed existing AES agreement levels;
- LR is spatially specific but has the potential for benefits similar to Landscapes Partnerships under the National Lottery.

The summary of key points from official stats analysis highlights the following:

- Farm businesses in Cornwall, Devon and Somerset are smaller than the national average by about 20ha
- Farm businesses across the GSW area are more likely to be livestock orientated and be based around family workers
- Small livestock farms have higher labour costs, smaller revenue and more reliant on support payments; BPS reductions will hit hard and early in the transition.
- The presence of family labour might make them more resilient but the livestock sector is also the least likely to seek out business advice and guidance.
- The role of the dairy sector has declined in terms of the number of holdings by 50% but number of dairy livestock and levels of production have remained the same, pointing towards an intensification of the sector.
- The proportion of permanent grassland has remained the same over the same period indicating little landscape change in the past 15 years

The reason for highlighting the amount of BPS being lost to the GSW is not to suggest swapping this for a similar-sized replacement. The future of sustainable farming won't be built on the same old subsidy models. However, the reality of what is happening is not well known and by sharing this information the aim is to help a wider range of people and organisations to think proactively about mitigating the adverse impacts of BPS withdrawal on the farming community, business ecosystem, and the GSW countryside. If this amount of money flowing into the GSW area was concentrated in a single location then special measures and funds would be found to mitigate the impact in that area, but with BPS this loss is being felt across over 17,000 businesses, each one with its own financial network in the rural economy.

A key factor is location, while all of GSW is rural, where a holding is located impacts the options available for doing things differently. There are three main city or urban agglomerations in the area, around Plymouth, the Torquay to Exeter coast in Devon and the coast around Bournemouth in Dorset. This will impact the number of potential consumers if you are considering a box meat or veg scheme. The more isolated might wish to access tourism options. A mix of environmental, economic and social factors will determine the choices by different farming enterprises and those furthest away from the agglomeration benefits of major urban centres may need to consider different options to those who are located within easy commuting distance.

It is crucial that these messages are shared and lead to positive action that embraces the whole of the rural economy and the contribution that farming makes to this. The types of changes that might occur are:

- significant impact on landscape and environment of the county as farmers seek to replace the BPS in their business models;

- increase in enquiries concerning easements and planning issues as farmers consider their options;
- the impact on the health issues of farmers and land managers, already it is recognised that this is a stressful job with a high instances of mental health issues;
- wider consideration of using a strong skills set outside farming, such as engineering, transport and construction;
- that different farm business will respond to this change in different ways, there is no single pathway to a more secure financial future.

The financial pressures are likely to increase in the period until 2024, meaning that actions need to be initiated now. Here we outline some suggestions while also encouraging appropriate stakeholders to come together and work collectively.

Suggested Next steps

The findings of this report contain key messages for economic development officers across the GSW, planning authorities and parish councils, environmental NGOs, public health sector, local businesses, notably in the food and drink sector and rural communities across GSW.

It's easy to assume that withdrawing farming support will only impact unprofitable businesses. When a farm business ceases to trade, more than the business is lost as there is a wider impact, like the ripples in the water when a stone hits, across the rural economy. Farming in the GSW is very much embedded in the wider regional economy, from the agricultural supply sector, business support on diversification, the ancillary industry, food produce supply chains and the tourism sector. The many potential knock-on effects for the rural fabric are hard to model, not least as discussions will vary from one business to the next. Recent work by the South West Rural Productivity Commission (2017) highlighted the connections between the various sectors in the GSW rural economy⁶, especially:

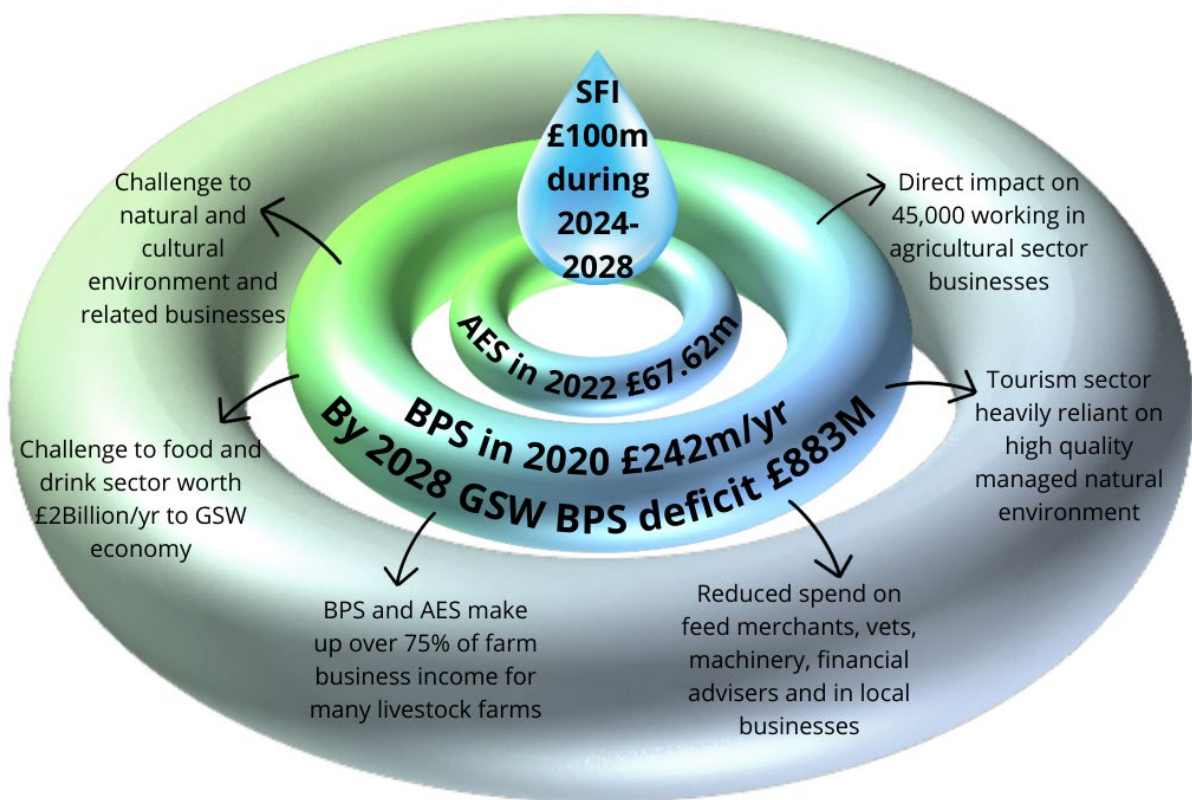
- agriculture, forestry & fishing, food & drink and tourism sectors heavily interconnected
- improved connectivity and high quality natural environment offer potential for businesses to grow and thrive
- agriculture, forestry & fishing make up about 25% of all rural businesses with a workforce of about 46,000.

Two key findings of the Rural Productivity Commission are to 'work collaboratively', form a 'broad coalition' to 'tackle head on the challenges facing farming, food& drink and tourism' by increasing engagement with and the implementation of an action plan for each sector. Using the findings of this report it is possible to make some of these connections a little more tangible:

- The Food and Drink Federation have over 1,100 members, employing almost 30,000 people and calculate that the sector is worth over £2billion to the SW economy in 2019 (FDA 2019).

⁶ The South West Rural Productivity Commission report covers the whole of the GSW area plus Wiltshire and Swindon.

- The link between farming and the food and drink sector is not direct but it is estimated that 61% of food produced in the UK is consumed in the UK (SWRPC 2017b).
- The revenue coming into farming is at least partly spent in the rural economy, assuming that 25-50% of the £883M is spent on the businesses supporting the farming sector this is a hit of between £220-440M⁷ in the next 5 years for feed merchants, machinery retailers, contractors, vets, solicitors and many others. This too will reduce their own spending power in the rural economy and so the impact of the agricultural transition goes on.
- The environmental economy is growing and linked strongly to tourism in the GSW area, research in Dorset suggests the environmental economy is worth £0.9-2.5bn a year (between 5-15% of the county's economy), most of this constitutes the managed landscape through farming. The loss of BPS represents a shock to the sector that manages this asset (SWRPC 2017b).



⁷ This multiplier calculation is difficult to calculate as the 'spend' associated with BPS is largely unknown. Farm businesses would need to find labour and living costs and other overheads from this source but the FADN used earlier has figures of more than 50% for what it terms intermediate consumption and capital depreciation but the proportion used to benefit the rural economy is a different calculation with little ability to assess how it is used.

Developing and expanding existing and new initiatives that connect different elements of the agricultural sector with the wider rural economy is key to mitigate the environmental and economic impacts of these changes in the agricultural transition.

The role of organisations such as the LEP, Local Planning Authorities, County and Unitary Councils, the NFU and Local Nature Partnership are key because these changes overlap a number of priority areas. Developing an integrated discussion to explore how these changes can benefit of the people, wildlife and economy of the GSW is the next step.

It is a chance to seize the opportunities they create, in part by implementing some of the recommendations of the National Food Strategy by linking food production with food consumption, as well as the South West Rural Productivity Commission. Biodiversity Net Gain and Carbon trading represent potential alternative sources of income for farmers wishing to diversify their portfolios to include non-food related products and outcomes. However, they remain emergent and there is a need for a framework around them to ensure transparency and trust for both investor and provider.

The issue of equity is important, here to noting that smaller farm businesses, notably in the livestock sector are reluctant to seek advice and pay for it, therefore relying heavily on peers. As a result, they are overlooked by conventional advice providers and include small and/or marginal land managers (e.g. hill farmers); female land managers; young land managers or new entrants; farm employees and contractors; producer groups; and part-time land managers (Prager et al 2016). These include many categories of farmer that this report has found to be more prevalent in the GSW area than in England as a whole, suggesting that the 'reach' of commercial advice across farms in GSW may be more limited than in England as a whole.

We suggest that key organisations across GSW use this as an opportunity to take the lead and develop an innovative and responsive system to provide support, guidance and a forum to promote a sustainable and just transition that will provide long-term value for money and increase the resilience of the whole GSW economy. It is worth noting that over the same period, farmers and land managers in Wales, Scotland and Northern Ireland will not face such rapid changes to support; while across the EU, the new CAP will continue to support farm incomes and additional funding has been offered to help address the current challenge of soaring input costs.

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Appendices

Appendix 1 – Agriculture in the South-West Factsheet:

The areas of interest for this analysis are: Cornwall and the Isles of Scilly, Devon Dorset and Somerset.

A. Characteristics of the Great South West farming area: General operating conditions of farming in the South-West

The Great South West area has a range of agroecological conditions that set it apart from the rest of England.

The geological bedrock (Figure 1A.) is of mixed nature but features a majority of ancient sedimentary bedrocks (Palaeozoic) relatively impermeable mudstone, siltstone and sandstone with a gradient in hardness from the East to the West. Intrusions of contemporaneous harder to erode plutonic bedrock can be found to the west, a rare occurrence for Britain (Dartmoor and Cornwall's hills). The South-West bedrocks features very little limestone, but the layers to the West tend to be very marly with conditions relatively similar to the mudstone. To the west they are softer and more permeable. Those bedrocks bedrock explains the hilly relief that can be found in most of the Great South West area (Figure 8), the differences of altitude between those as well as the subsided plains in Somerset, Dorset or around Exeter. Compared to the rest of Britain

Most of the relief is linked to a water-linked erosion (Figure A1.1 and A1.2). The watercourses tend to follow the path of least resistance.

1. Exmoor, Dartmoor and Cornwall hills are harder to erode and more impermeable they stand out and give thinner, rockier soils on plateau relief (except eventual peat deposits). Water paths are centrifugal around them.
2. On the flipside, watercourses tend to erode better the impermeable limestone and mudstone along its fault lines, strata or in synclines explaining the valley axis in most of Devon; it gives a landscape of hills and ridges sometimes quite steep. The soils would remain relatively thin and impermeable and sometimes quite rocky (if on sandstone, grit)(except in valley floor). The south Devon and Cornwall would feature deeper and free-draining soil.
3. Arguably the best soils of the area would be found on sandstone or the permeable limestones (to the east), their increased permeability giving larger ridges/hills but most of all more free-draining soils. Those can mostly be found in a strip from Taunton to Exeter (50 km wide).
4. Finally, soft and permeable substrate can be eroded easily (mudstone/limestone in Somerset and Dorset) and would give a centrifugal organisation of the watercourse, congregating where it is soft with subsided plains or large and smooth hills in Somerset or Dorset. Those would feature heavy alluvial/tidal sedimentary deposits. A part of the soils might be particularly heavy or waterlogged and usually they are deeper, loamier than the other parts of study area.

South-West Geology - General differential analysis (Digimap BGS 1:625000 map)

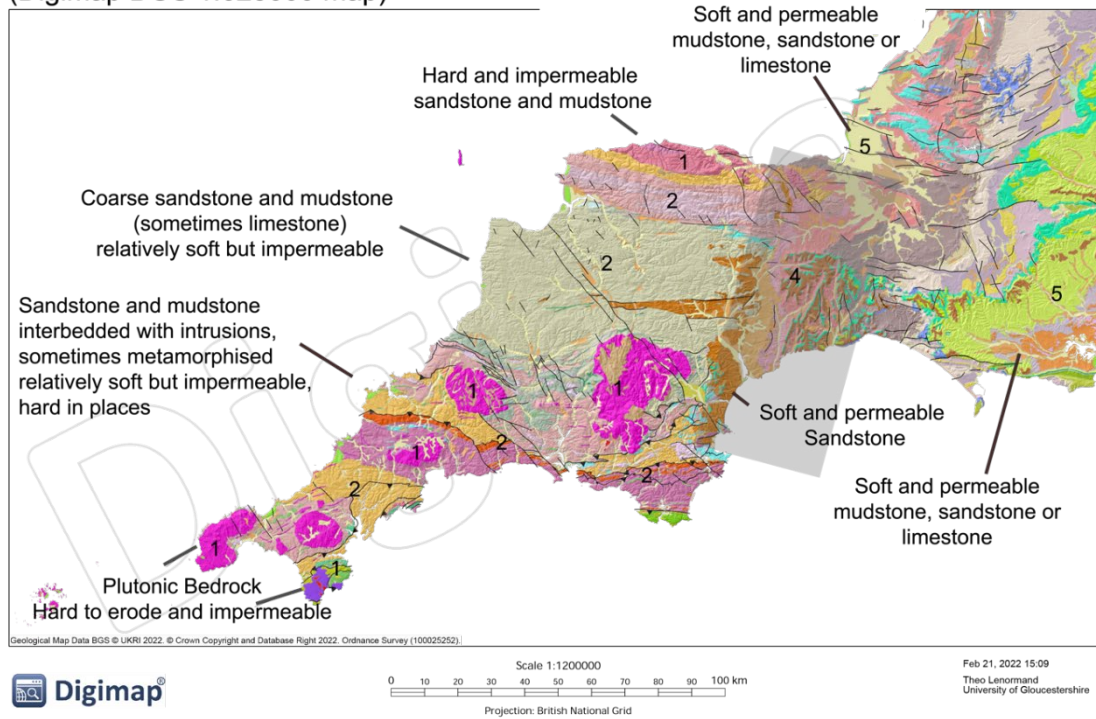


Figure A1.1: Geology map of the South-West from the Britain Geology Survey with simplified annotations, full legend here (Digimap Geological Data and Annotations from authors)

Relief map of the South-West Counties of England including watercourses (From EU elevation data)

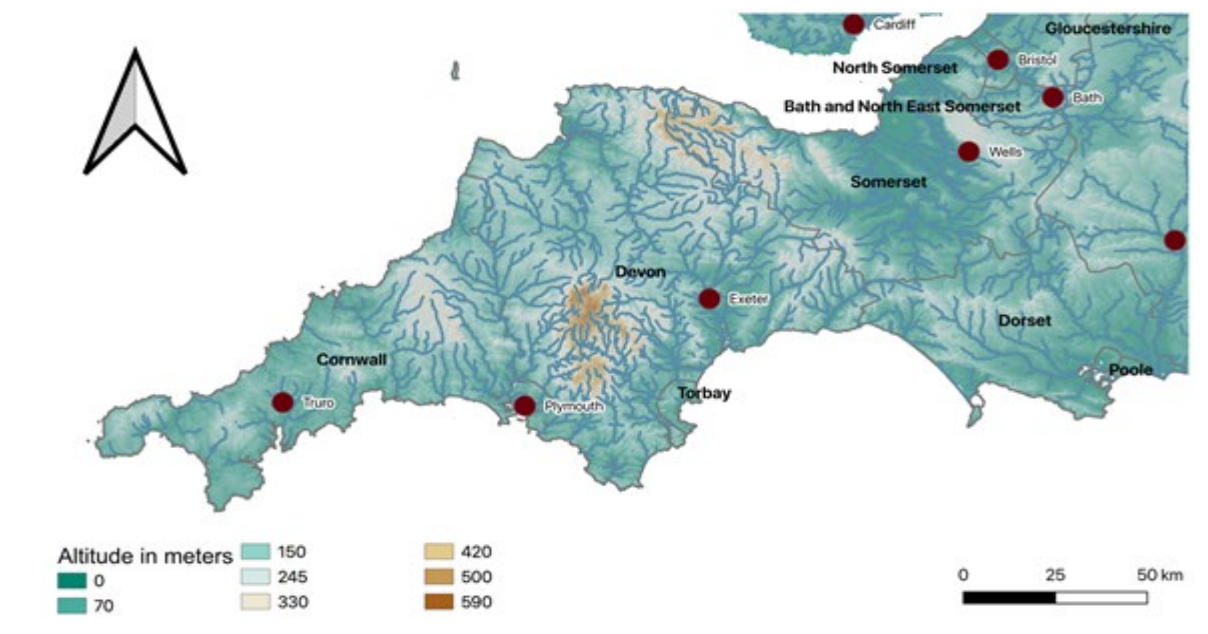


Figure A1.2: Relief map of the South-West including main cities and the waterways network (By the authors, elevation data from EU-DEM Copernicus, waterways from OS)

5. Some coastal areas around rivers mouths might feature deposits of free-draining sand and gravel or heavy alluvial/tidal sedimentary deposits. Giving either good, free draining soils (Penzance) or more challenging to work heavier sometimes clayish and always loamy soils (Dorset).

The agricultural land classification (see Figure A1.3) reflects what we described above with most of the area grade 3 and the bottom of most valley 4. Most of it being better suited for grazing than cropping. With some phenomenon of waterlogging quite common. The best graded land can be found along the 4). Finally, despite its better relief most of Dorset is graded as 3.

Agricultural Lands Classification of the South-West of England (Defra)

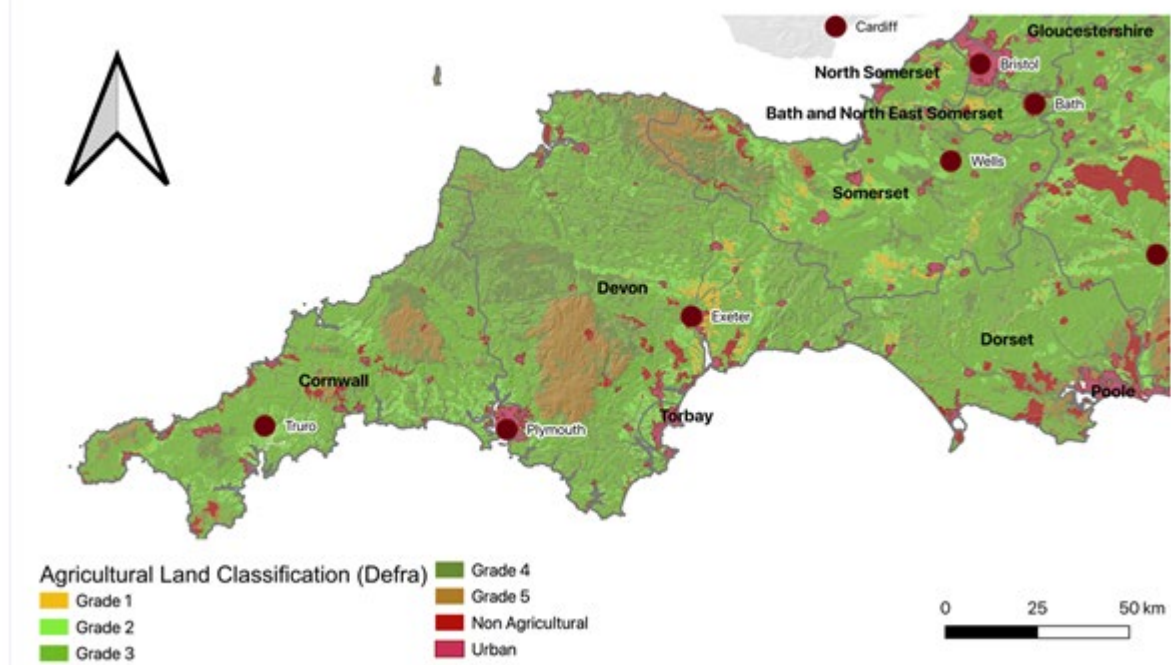


Figure A1.3: Agricultural Land Classification in the South-West of England (By the authors from Defra data)

An analysis of meteorological conditions shows that (Figure A1.4) overall the region is wetter (all year round), sunnier and milder than the rest of the UK, it will also face stronger winds, particularly over winter. These conditions are particularly favourable to grass growth or crops like Maize but less so for a number of combinable crops, such as cereals and oil seed rape.

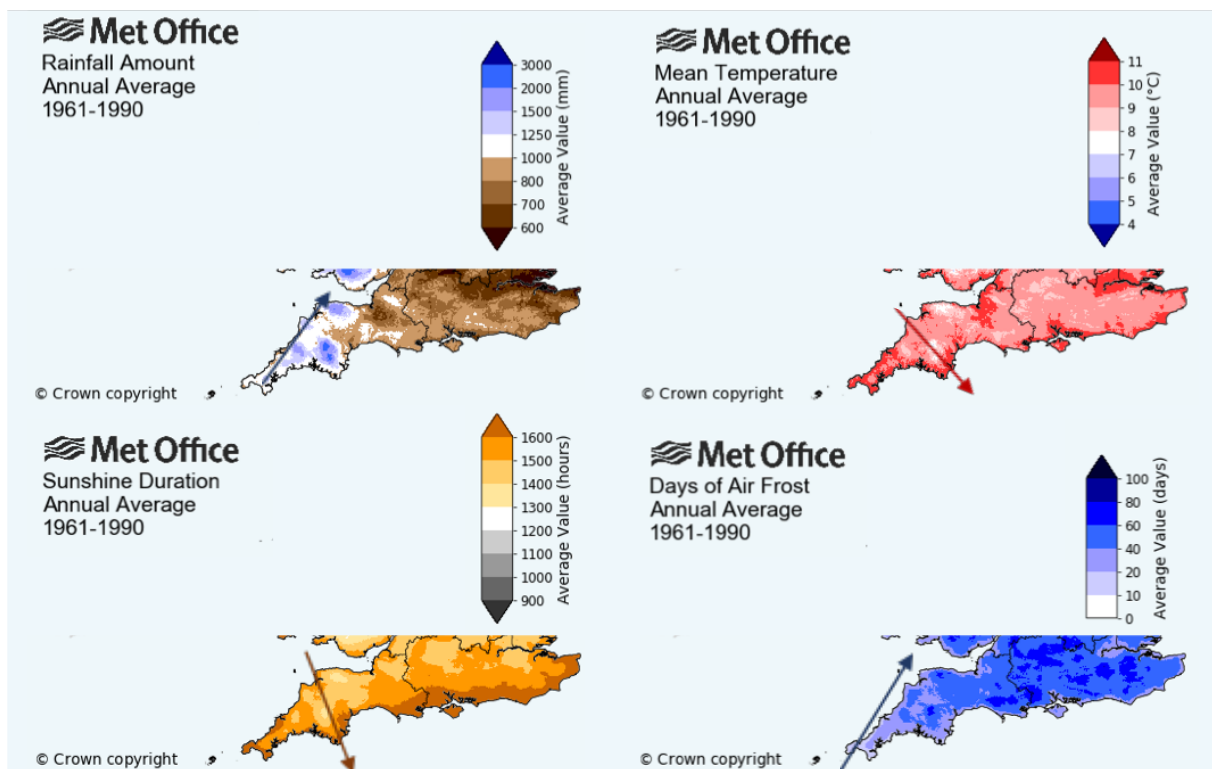


Figure A1.4: Average Met Office climate data on the South-West of England (By the authors from Met Office maps)

Two gradients are clear, the first one concerning rain, the high relief of the hard and higher hills receive the highest rainfall (nearly as much as the Cambrian mountains in Wales) with a decreasing gradient the further East you look. There is also a decreasing temperature gradient the further from the coast you travel, due to the sea buffering effect, and altitude increases. Total hours of sunshine also reduce towards the north and in areas of higher altitude but increase towards the east. This tends to extend the range of possibilities for those with less rainfall, more sun and higher temperature, particularly if it's combined with permeable soils or gentle slopes.

Appendix 2 – Analysis of GSW area by Farm type and land use

Most farms are located in Devon the largest county of the area, with Somerset and Cornwall similar and Dorset the smallest. Interestingly, Dorset is the only county to have a larger area of agricultural land compared to the number of farms, suggesting that the farms tend to larger.

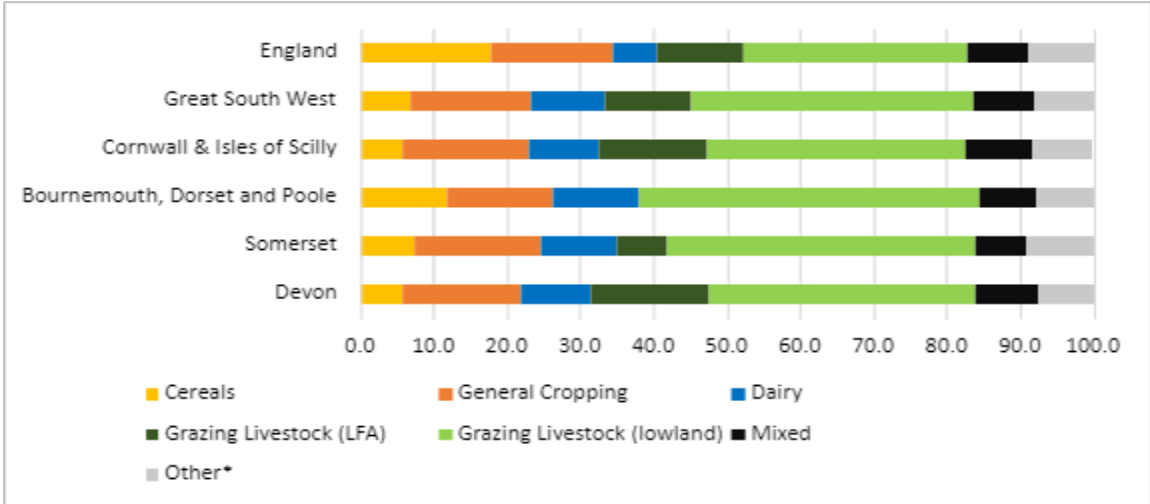


Figure 3: Land use in the Great South West compared to England (*includes rough-grazing sole grazing rights)(adapted from Defra 2016)

This differences in land management are less obvious when looking at farm types, with Dorset only slightly higher in cereals and general cropping farms but close to 50% lowland grazing livestock. LFA grazing livestock areas are significant in Cornwall (Bodmin) and Devon (Dartmoor) However, the proportion of grazing/mixed farms remains higher than 50% in all four counties. A higher proportion of dairy farms can be found in Dorset but it is an important sector across the GSW area. Overall the four areas have a higher proportion of dairy and grazing livestock farms than England as a whole, emphasising the role of livestock in the region.

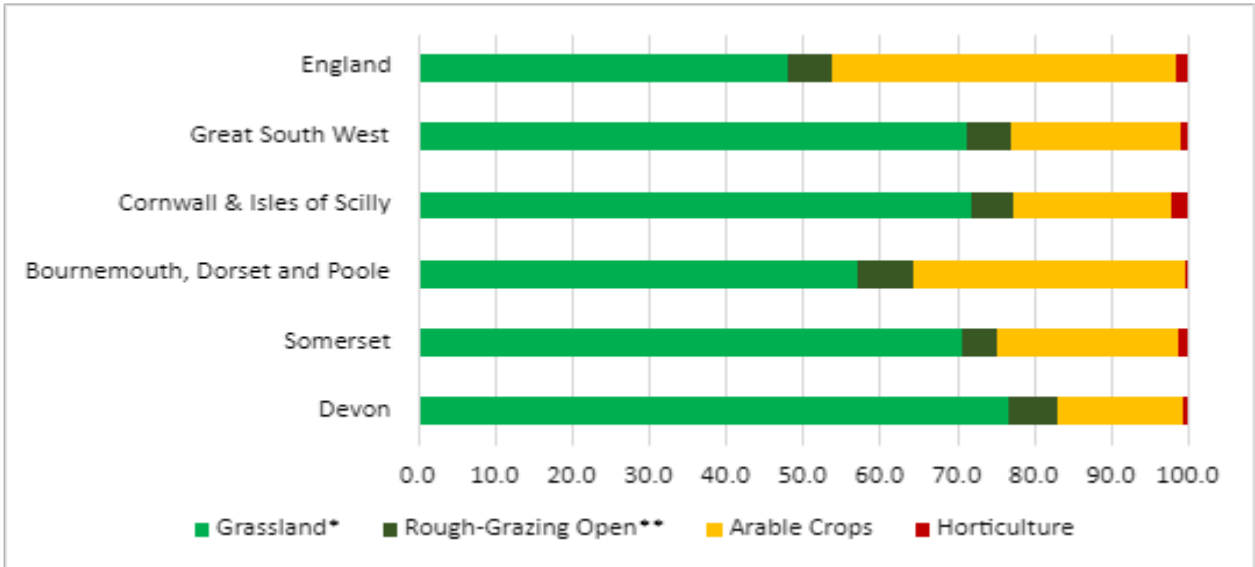


Figure 4 Type of land management in the Great South West compared to England (adapted from Defra 2016)

An analysis of land use shows us that again Cornwall, Devon and Somerset tend to feature very high levels of Grassland between 72 and 78% compared to Dorset (57%). Dorset has the highest share of arable cropping (35%) but this is still lower than the national average. Horticulture is rare in Somerset and Devon with slightly more in Cornwall, mostly around the south-coast. The rough-grazing share is evenly divided across the region but as we can see on the ALC map (Figure 1) the main areas are in the central block and focus in the Dartmoor and Exmoor national parks and Bodmin.

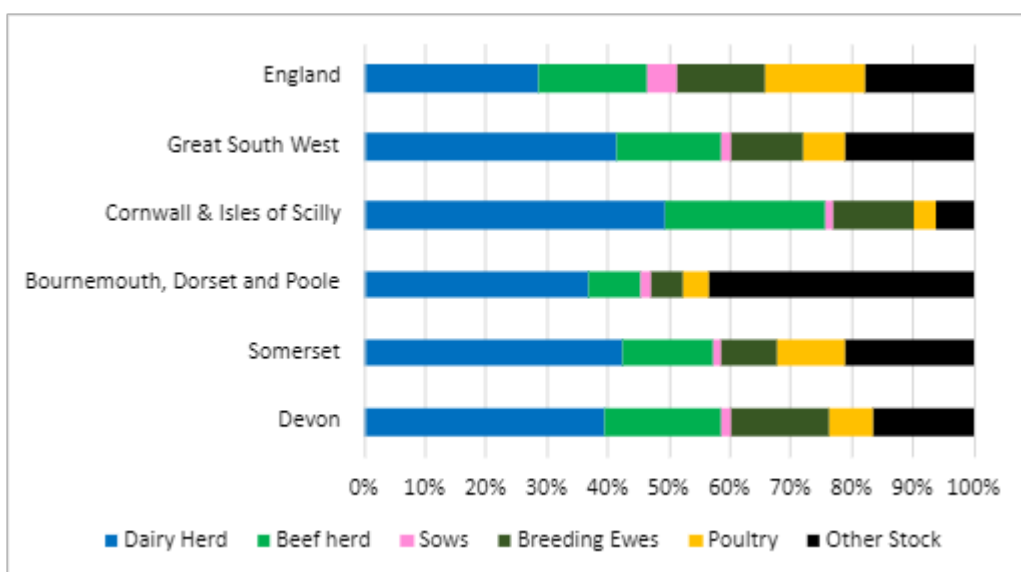


Figure 5 Livestock Standard units in the Great South West compared to England (Other includes non-breeding stock) (adapted from Defra 2016)

It is particularly interesting to compare the different types of livestock in the GSW area as they dominate farming in the region. The number of dairy cattle is a third larger than the England average but there is less poultry and slightly fewer sheep. As a proportion, Cornwall has the most dairy and beef animals and fewer poultry. Somerset has the most poultry (11%).

Dorset seem to have a relatively small beef herd compared to Cornwall and Devon. We also note the low proportion of ewes in the livestock of Dorset and Somerset compared to Cornwall and Devon, possibly relating to the better agro-ecological conditions. All 4 areas feature little poultry farming compared to the rest of England.

We also compared the number of other cattle to the breeding herds (dairy and beef) and we noticed that Dorset was low compared to the others areas or England, Somerset coming second, Devon and Cornwall having a much higher number closer to England's average. This is linked to the small suckler herd of Somerset and Dorset but it also shows that followers tend not to be reared long on farms, it might suggest a higher finishing speed or a lower rearing rate.

Table 5 shows by the average stocking density in England and the GSW covering the average number of dairy cows per herd, the Livestock Grazing Units (LSU) per hectare and the LSU for cattle (dairy and beef).

Table 5: Livestock comparison by county, GSW and England

	Average Number of Dairy Cows per herd	Average LSU/ha	LSU cattle/LSU beef and dairy herd, number of followers
Devon	164	1.00	1.89
Somerset	186	1.05	1.62
Bournemouth, Dorset and Poole	217	0.80	1.41
Cornwall & Isles of Scilly	168	1.00	1.90
Great South-West	177	0.98	1.76
<i>England</i>	<i>171</i>	<i>0.69</i>	<i>1.88</i>

In terms of dairy, the average number of cows per herd is highest in Dorset (217) and lowest in Devon (164) but the overall GSW average is close that that of England as a whole. In terms of LSU per ha the GSW average is higher than for England meaning that there is a higher stocking density in GSW. Somerset has the highest LSU (1.05) and Dorset the lowest (0.80) all higher than the England average of 0.69.

Appendix 3 –

The section focuses on Raw Product (RP), the value of the output of the farm, and the Intermediate Consumption (IC), the value of all intermediate inputs used to produce the output on a regular basis (i.e. bought-in feed or fertilizer, but not buildings). It also considers capital depreciation (DK), the annual depreciation that can be associated to the running of the farm (fixed and working capital, such as tractors or buildings).

Each economic results of farms is decrypted through looking at the how the raw product decomposes and is represented by the output sold at farmgate prices. To get the added value produced by the system you have to subtract Intermediate Consumptions that are the yearly spending to have the farming system running and Investment Depreciation that spans the accounting value of infrastructure and machinery every operating year. Finally, the Agricultural Revenue before tax takes out the rent, taxes and the worker's salary, as shown in the figure below as 100% of Raw Product.

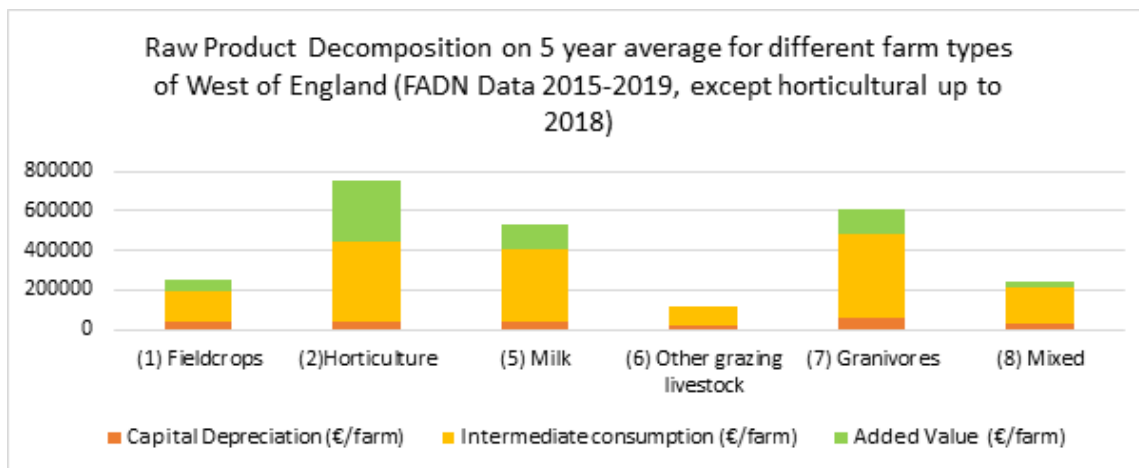


Figure 7 The decomposition of the raw product in farming

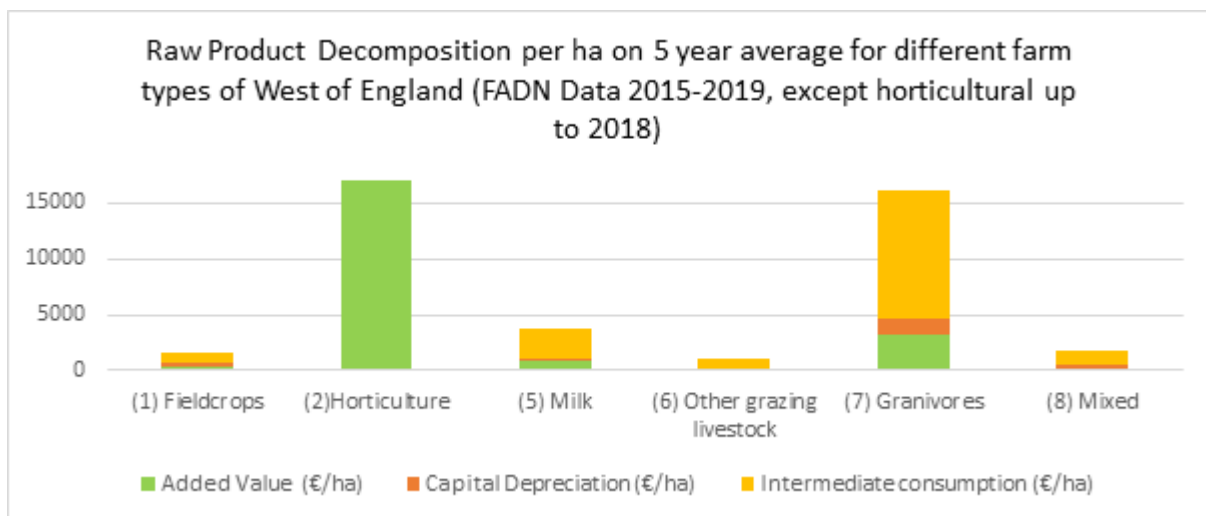
By looking at the agricultural revenue (before tax), we can compare different farms regardless of their business structure with the agricultural revenue is examined at an individual level.

Looking at the 5 year data from 2015-2019⁸ across the West of England, we note that the input/output context has been difficult for many farming systems, and various quite markedly. The data is similar to the Farm Business Survey using selected enterprises and shows the average for each farming system. Detailed market data is available on each production system, including assessment of inputs via a separate output. The livestock is notably lower and without a top green line.

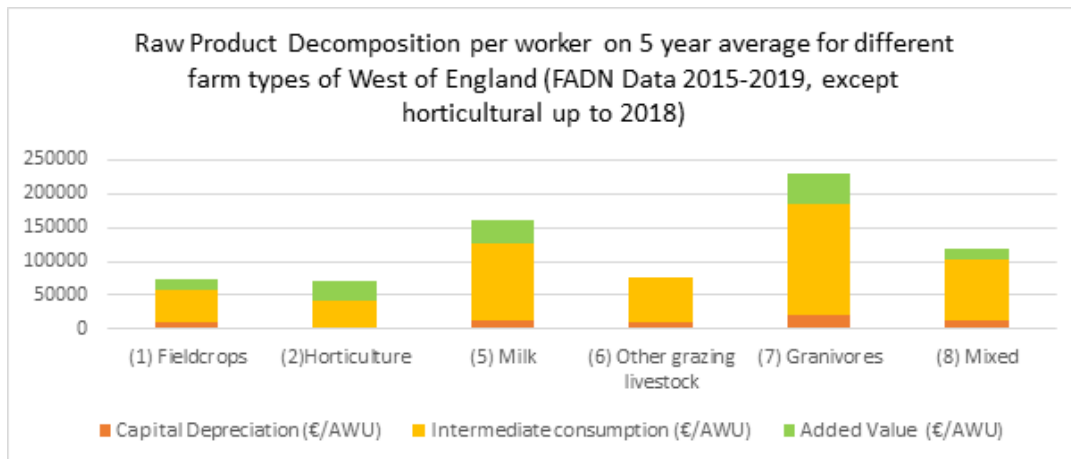
⁸ FADN is the [Farm Accountancy Data Network](#) monitors farms' income and business activities. Similar to the Farm Business Survey it is based on the outputs of a selected number of business across the West of England. Note the data is via a European site so all figures are in Euros.



The results have been averaged over the past 5 years. The raw product decomposition analysis shows us that there are big differences in terms of output for the different types of holding. Grazing livestock tend to lead to little or no economic creation closely followed by mixed farming and field crops. Alternatively, all 3 other types return high added value of at least 100K€. Note the data is via a European site so all figures are in Euros. As noted earlier there are only small number of horticulture and pigs and poultry (granivores) in the GSW area, but they remain economically important.



Looking at the raw production decomposition per hectare gives us an idea of the intensity of the economic activity per hectare. The output per hectare is particularly low on grazing livestock farms, but their agro-ecological conditions might restrict them in other farming orientations. For mixed farms, this might be partially true as they have some arable crops but their economic creation is relatively low. The intensity per hectare of those systems is low. Field crops return relatively low raw product and added value per ha, even on specialized arable farm. This may be due to lower prices and possibly linked the quality for their arable products compared to East Anglia (proteins level, dryness due to agro-ecological conditions). In terms of economic value creation, the most interesting productions are Horticulture, milk and granivores (poultry, hens, pigs). We note that those productions are the most inputs heavy either linked to bought-in feedstuff or the use of fertilizer/fuel, more intensive.



Comparing the per worker raw production decomposition shows the very high work productivity on milk and granivores but as well the low remunerating prices for meat production and field crops, including horticulture. We note that horticulture despite this manages to return similar added value levels as 5 and 7, possibly due to reduced machinery cost compared to field crops. The differences in economic creation and total output are much smaller per worker than they were per hectare.



A COLLABORATION BETWEEN



CONTACT

ccri.ac.uk
+44 (0) 124 714122
ccri@glos.ac.uk