



Farming Income for Semi-Natural Grasslands

Plantlife

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An evidence summary and analysis report on the economics of farming semi-natural grasslands in Britain

Grasslands account for just over 70% of the UK's utilised agricultural area, and with appropriate management, semi-natural grasslands can support sustainable food production, as well as provide ecosystem services and wider societal benefits (i.e. 'public goods'), such as mitigating pollution and flooding events, and storing carbon in their soils. Yet farmers still need to be able to make a living in managing their land for environmental outcomes and public goods: currently, grazing livestock has one of the lowest incomes of farm types assessed by Defra in 2022/23, leading to risks of farm abandonment, or grassland conversion. This report outlines the challenges faced by farmers under current schemes for managing semi-natural grassland, and looks at economic models for how farmers may diversify their income streams now or in the future, to adaptively manage their grasslands for food production, nature, climate and societal benefits.

This report has been written by SLR Consulting – SLR is a global leader in environmental and advisory solutions: helping clients achieve their sustainability goals. We have a proven track record of policy-based research, data-analysis and significant practical and theoretical expertise on ecosystem surveys, impact assessment and assessment of ecosystem services within our Ecology & Biodiversity team.

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Pasture for Life champions the restorative power of grazing animals on pasture and advocates for a future where grazing animals eat only their natural diet – pasture – and play positive ecological roles in our landscapes.

In transitioning farmers to these practices, we generate positive impact in the areas of environmental, animal and human health as well as supporting a thriving rural economy and wider sustainable food system



The opinions expressed in this report are those of the author and do not necessarily reflect the view of the organisations who commissioned the report – Plantlife and WWF-UK.



This report has been funded by Air Wick in partnership with WWF, with a pledge to restore 20 million square feet of UK wildflower habitats between 2021 and 2024.

'Working together to help restore UK wildflower habitats'



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1.0 Introduction

Modern agriculture in Britain was largely shaped by the 1947 Agriculture Act, which sought self-sufficiency in food production. The UK's accession to the European Union in 1973 continued this production-focussed approach. The Common Agricultural Policy (CAP) evolved post-1992 into a two-pillar model. The first pillar focused on economic outputs and farm incomes, whereas the second aimed to protect sensitive environmental landscapes via agri-environment scheme agreements and rural development funding and support. The second pillar has sought to promote changes in land management to protect specific landscape and ecological features.

Farmers are by far the most significant managers of semi-natural and species-rich grasslands¹. The decision-making environment within which they operate is complex, influenced by past and current events, family history, neighbouring land-use, geography, climate, soils, macroeconomic, political and policy decisions, industry dynamics and trends, to name but a few².

At a pivotal moment for the industry, this report delves into the economics of farming across England, Scotland, and Wales, evaluating the financial resilience and potential returns for farmers when managing these lands for food, societal, biodiversity, and climate benefits. Central to this report is the assessment of how feasible it is for farmers to earn a living from semi-natural grasslands, and the identification of areas requiring additional financial support. As the farming community explores diverse income streams, such as through carbon markets, this report serves as an evidence-based guide for policymakers in the farming and environmental sectors.

1.1 Report structure and methodology

The remainder of this chapter sets out the current status of grasslands across Britain and outlines the decision-making context within which farmers make decisions which affect the outcomes for semi-natural grasslands on their farms. Chapter Two delves into farming income patterns including barriers to a transition to nature-positive farming practices. Chapter Three introduces options for diversified income streams available to farmers which support adaptive grassland management or other nature-positive options. The costs of managing grassland for nature, as well as enabling this transition are considered in Chapter Four.

In conducting this report, we undertook a comprehensive evidence review, using various literature types like peer-reviewed articles, governmental reports, and grey literature. We have cited relevant sources throughout, ensuring our analysis is well-informed and offers a comprehensive discussion on grassland farming in Britain.

In addition, we have drawn upon four case studies provided by Pasture for Life that outline several important aspects of our research findings. These case studies cover livestock farms with sheep and cattle on a variety of grassland types in England and Wales.

¹ See the Glossary for definitions of 'semi-natural' and 'species-rich' grasslands, as well as other key terms used in this report.

² A recent study in Germany investigates some of the main decision-making aspects related to agri-environmental schemes: <https://www.sciencedirect.com/science/article/pii/S0264837722003982>



Table 1-1: Case studies included in this report

Case Study	Location	Farm Size (Hectares)	Section in Report
Emma	Gower, Wales	77	2.2
Leigh and Neil	Malham, England	485	2.4
Brian and Sorcha	Troedrhiwdrain, Wales	580	2.4
Bella and Toby	Witheridge, England	42	3.1

1.2 Grasslands in Britain

A recent report commissioned by Plantlife³ examined the extent of different grassland types across the UK, and how they have changed in extent over time. From a habitat perspective, the Land Cover Map 2021⁴ data found that grassland covers approximately 40% of the UK, with nearly 30% of UK land classed as “improved grassland” - defined as intensively managed, highly modified grassland that is dominated by a few species (such as rye grasses) and may be regularly fertilised. Ten percent of UK land is classed as semi-natural grassland, comprising acid, calcareous and neutral types, with just 1% of UK land being high-nature value semi-natural grassland, characterised by a high diversity of plant and fungal species, appropriate management, long-establishment and with healthy, functioning soils and structural diversity (ONS, 2015).

Wales’ land area is 65% grassland, whereas England and Scotland have 38% and 35% of grassland cover respectively. Semi-natural grasslands comprise just 5% of England’s land cover, or 700,000 hectares, whereas 23% of Wales is home to this grassland type.

Over 70% of the UK’s land is used for agriculture, comprising 17.2 million hectares, a proportion that has remained relatively consistent in the 21st century⁵. Over seventy percent of this land comprises grassland: permanent grassland 58%, temporary grassland 7% and common rough grazing also 7%. Estimates of agricultural land extent in England (data from 2022), Wales (data from 2015) and Scotland (data from 2011) are shown in Figure 1-1.

Wales and Scotland share many similarities in their agricultural land and grassland composition, having wetter climates and more upland and mountainous topography than England, and more unenclosed grazing pastures. Much of Wales’ and Scotland’s agricultural grassland falls under “less favourable area” (LFA) land, which indicates areas where production conditions are difficult, perhaps due to poor climactic and cultivation conditions. The dominant agricultural industry here is grazing livestock, in particular sheep, in smaller farm holdings on lower incomes. For example, in Wales 80% of the grassland pasture is classed as LFA land, and for Scotland this figure is 85%.

³ <https://www.plantlife.org.uk/our-work/the-grassland-gap/> (see the ‘Report: Review of Trends in Grasslands Across the UK’ link available).

⁴ DOI for Land Cover Map 2021 (land parcels, GB): Marston, C.; Rowland, C.S.; O’Neil, A.W.; Morton, R.D. (2022). Land Cover Map 2021 (land parcels, GB). NERC EDS Environmental Information Data Centre. <https://doi.org/10.5285/398dd41e-3c08-47f5-811f-da990007643f>

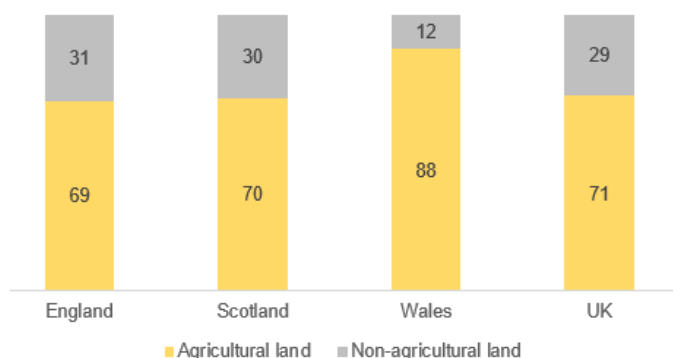
Definitions for grassland types are not provided within LCM data, so it is unclear if the summary statistics for “improved” grassland relate to permanent grasslands (>5 year continuity) or also include temporary grassland, e.g. annual grass leys.

⁵Defra (2022). Agriculture in the UK Evidence Pack: September 2022 Update. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1106562/AUK_Evidence_Pack_2021_Sept22.pdf



Figure 1-1: Agricultural grasslands in the UK

Across the UK, 71% of land is used for agriculture.



Within land that is used for agriculture, a significant area comprises grasslands.



There has been a large decline in the extent of species-rich grasslands across the UK since the 1930s. As set out in recent reports⁶ published by Plantlife, species-rich, semi-natural grassland types provide more ecosystem services in comparison to improved grasslands, both in terms of breadth and quality, yet are also habitats which have seen the largest reductions.

Agricultural intensification following the second world war resulted both in the conversion of grasslands to arable farming, and the shift towards creating high-intensity grazing pastures, resulting in a loss of species-rich meadows that were cut for hay or grazed at low-intensity. Whilst in the latter case this land was still retained as grassland, the meadows became uniform and dominated by a few palatable grass species (so-called “improved grassland”) in order to maximise possible output from the land.

Conversely, decline in the ecological condition of grasslands also occurred from reduced grazing and management, with some meadows being abandoned: grassland types such as lowland and upland meadows are reliant on yearly seasonal grazing or mowing regimes to maintain a diverse sward, with a variety of grass and herbaceous species present. These abandoned meadows typically revert to more species-poor swards, or are subject to natural succession with scrub encroachment, for example. The remaining meadows are highly fragmented, reducing their resilience to external perturbations, such as climate change, and their ability to promote species dispersal and recovery.

In more recent years, drivers such as atmospheric nitrogen deposition (e.g. from slurry spreading), inappropriate management, and habitat fragmentation have continued to

⁶ <https://www.plantlife.org.uk/our-work/the-grassland-gap/> (see the ‘Reports and Supporting Information’ links).



contribute to the decline of species-rich grasslands. In the uplands in particular, forestry has been a major driver causing the loss of acid grasslands, and long-running surveys (such as the Countryside Survey) have cited habitat loss to urban development as another contributing factor.

1.3 Farmers' nature-positive options

Over several decades and increasingly today, important factors for on-farm decision making come from public and private payment mechanisms which provide payments for goods and services including 'public goods' such as biodiversity. The extent to which these mechanisms provide certainty is central to the decisions taken by farmers; decisions with far-reaching impacts for the protection, and management of species-rich grasslands. Understanding the balance of factors at play is key to any attempt to plan and implement a large-scale transition to more comprehensive nature-positive agriculture in Britain.

Most agri-environment schemes have been voluntary in nature, with farmers choosing whether or not to participate, and in many schemes, also free to decide which parts of their holdings they enter into the scheme. This has frequently observed to result in 'halo' effects, where reduced input on some land is offset by increased inputs on other parts of the holding, or on land managed elsewhere. Importantly, British agri-environment schemes have largely been based on the principle of compensating farmers for costs incurred and profit foregone. This sets an important context for farmer engagement, essentially framing environmental work as activity which costs them money and limits their 'productive farming' capacity.

We begin with a simple conception of what is a complex subject: how farmers in Britain might approach the transition to more nature-positive agriculture⁷. We have identified ten possible contexts for individual farmers in Britain. These are described below and depicted in Figure 1-2 based on the potential for nature-positive farming to deliver a decent livelihood.

- 1 Transition with own resources: These are farmers who believe in the potential of nature-positive farming to generate sufficient income and have the necessary resources to initiate a transition. They are equipped, from both a finance and knowledge perspective, to embrace nature-positive practices.
- 2 Transition with support: These farmers see the financial potential in nature-positive farming, but are resource-constrained. Their journey involves seeking public support for nature-positive actions (see Chapter Two).
- 3 Mix with carbon markets: See the potential of nature-positive farming but lack resources. Their path to transition involves exploring alternate income streams, predominantly from carbon markets. These farmers might also seek public support payments (see Chapters Two and Three and Appendix One).
- 4 Mix with diversified income: As above, but with less reliance on carbon markets and more on other opportunities such as biodiversity offsetting, renewables and/or tourism (see Chapter Three).
- 5 Active collaborators: The path to transition is based on farming and private sector opportunities, in collaboration with others. This might include those with small farms, who collaborate to form local 'farm clusters' to benefit from economies of scale and/or tenant farmers who collaborate with landowners to find mutually-beneficial market opportunities (see Chapter Three).
- 6 Potential collaborators: Importantly, they see the income opportunities of nature-positive farming. However, at this stage their path is unclear perhaps because

⁷ By 'nature-positive' we mean, 'A high-level goal and concept describing a future state of nature (e.g., biodiversity, ecosystem services) that is greater than the current state.'

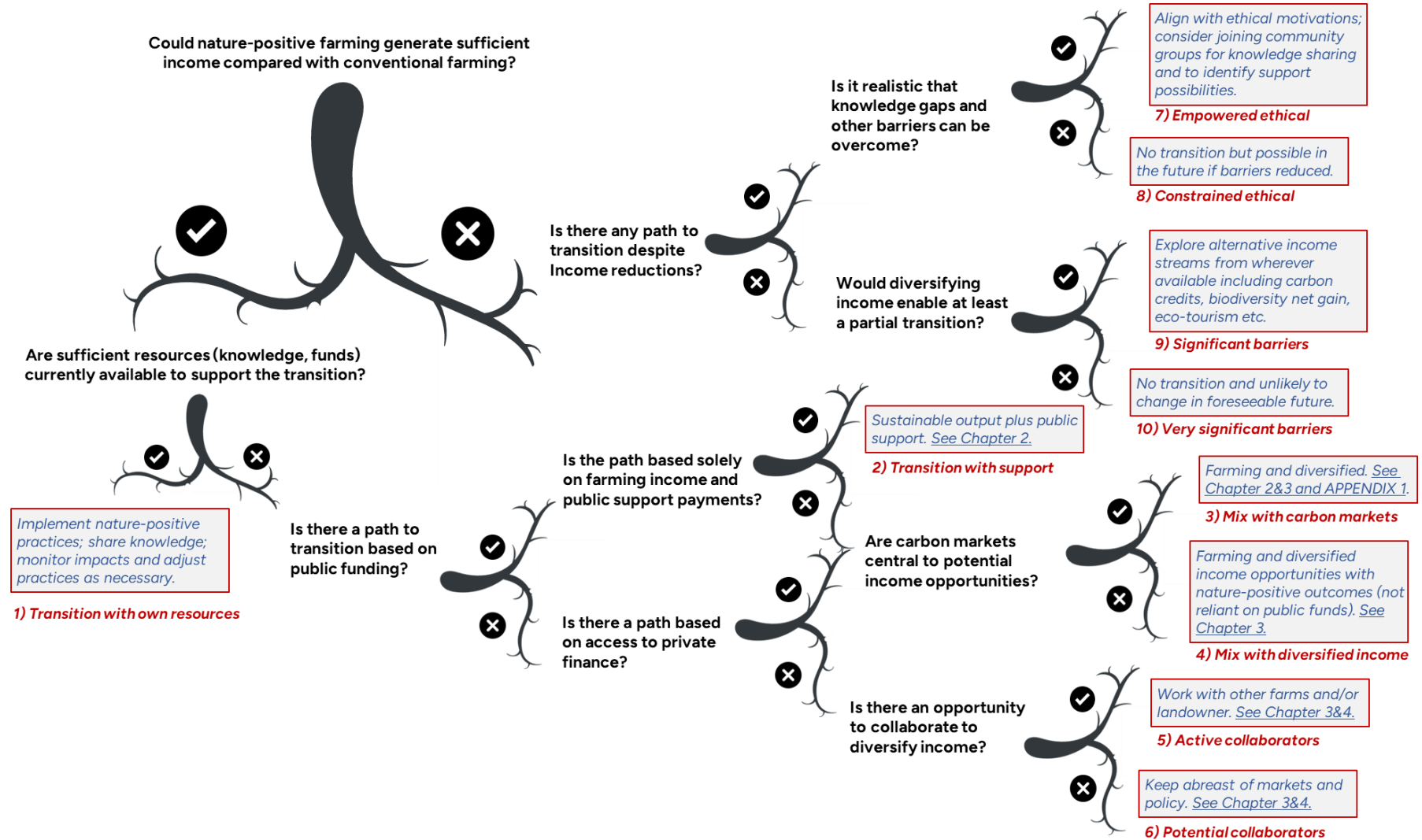


markets are nascent or because they are small tenant farmers with very limited flexibility to make long-term investments (see Chapter Three).

- 7 Empowered ethical: These farmers want to make a change due to ethical reasons but recognise their knowledge gaps. Their transition is marked by actively seeking training, building knowledge, and reflecting on the wider benefits of nature-positive farming. They might lean heavily on community support and shared experiences.
- 8 Constrained ethical: Not in a position to transition for financial reasons. Motivations lie in ethical considerations, but barriers are such that no transition is possible.
- 9 Significant barriers: Farmers in this group see no clear advantages in making the shift. They will require more substantial incentives, policies, or market shifts to reconsider their stance. In the foreseeable future they continue with their existing practices with perhaps a minor element of diversification (see Chapter Four).
- 10 Very significant barriers: This group does not see potential in nature-positive farming nor diversification (see Chapter Four).



Figure 1-2: Simplified decision-making context for farmers' nature-positive decisions (not exhaustive)



The illustration in Figure 1-2 offers a framework to understand farmer' challenges. While it simplifies the intricate choices farmers face daily, it serves as a starting point to engage with the multifaceted challenges they encounter.

This report is relevant to all groups of farmers in Britain, though it is most relevant for those who feel that nature-positive farming can generate sufficient income but do not currently have the resources to act (i.e. those for whom boxes two to six in Figure 1-2 are most applicable). As will be explored in subsequent chapters, many farmers recognise the potential for nature-positive farming to be profitable and are motivated to contribute to solutions. But the numerous barriers, whether up-front capital costs or limited market opportunities or knowledge gaps or confusion about agri-environment options, block the transition.



2.0 Farming livelihoods for nature-positive outcomes

Farmers face a complex set of challenges in transitioning to nature-positive agriculture. Chapter Two summarises the economics of farming in modern Britain, revealing that net farm incomes remain limited, especially for livestock grazing enterprises that often manage permanent grasslands. Multiple systemic barriers deter farmers from adopting nature-positive practices, even where these may boost long-term profitability.

Current public policies provide some solutions but also reveal the need for more comprehensive, streamlined and ambitious frameworks across the UK's devolved administrations. Transitioning to nature-positive farming is not merely about techniques but confronting deeply-rooted beliefs. This chapter lays the groundwork for understanding farmers' challenges and emphasising collaborative solutions that consider the systemic, cultural and financial barriers they face.

2.1 Net incomes

2.1.1 Farm Business Income

Average Farm Business Income (FBI) is derived by taking a farm's gross output (including subsidies) and subtracting all explicit costs, such as those for seeds, fodder, and hired labour⁸. FBI has the same meaning as the widely used financial accounting term 'net profit'.

Between 1 March 2021 and 28 February 2022, the average UK farm's FBI was £72,000. Even allowing for inflation, this is a significant increase on the three-year average between 2018/19 and 2020/21, where FBI was £50,900. The year 2021/22 was unusually volatile, with price increases more than offsetting input cost increases (e.g. milk and wheat up 40% and 50% in value). However, FBI varies significantly by farm type, with cereal and dairy farms' FBI being some 60% higher than average for 2021/22. Conversely, farms reliant on grazing livestock had an FBI in 2021/22 of only £33,000 (both LFA and lowland)⁹. Half of UK farms are under 20 hectares, and often have FBI significantly lower than the mean average.

Using the average FBI for the three years between 2018/19 and 2020/21, Figure 2-1 illustrates the constituents of FBI in more detail. The icons in the figure are proportionately sized, and a number of patterns can be noted:

- Dairy followed by beef and poultry provide the bulk of UK income¹⁰ from livestock farming, with income from sheep, pigs and eggs contributing less;
- Cereals provide the most income from crop farming, followed by vegetables/flowers. Britain imports the vast majority of its fresh fruit, and this is reflected in the relatively minor contribution of fruit for UK farm incomes. The other crop icons in Figure 2-1 show potatoes and the generic cropping icon represents both industrial crops and 'other' (including forage and plants);

⁸ Defra define FBI as: "the return to all unpaid labour (farmers, spouses and others with an entrepreneurial interest in the farm business) and to all their capital invested in the farm business including land and farm buildings."

⁹ Table 3.1b: <https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2022/chapter-3-farming-income#:~:text=In%202021%2F22%2C%20the%20average,FBI%20of%20over%20%C2%A350%2C000.>

¹⁰ 'Income' here is gross income (i.e. before any costs are deducted). This is contrasted with 'FBI' where the income is net of costs.



- Diversification provides less than 8% of gross farm income. Everything from farmhouse B&B income to that from renewables or carbon markets currently contributes less than one tenth of incomes. The potential to increase revenues from diversified income sources is the focus for Chapter Three of this report;
- Agri-environment and direct payments make up a very small percentage of gross income (less than 2% and 10% respectively). They make up a far higher percentage of FBI, however, because of the limited costs associated with them¹¹ and therefore are an important part of farm management decisions;
- It is important to distinguish between fixed and variable costs, especially if there is to be nature-positive transition. Fixed costs do not change based on production and so, at least in the short-term, are constant¹². The most significant fixed costs are machinery followed by property (including rents where applicable¹³). Regular labour represents around 16% of total fixed costs and 'general farming costs' including water and electricity the remaining 28%;
- Livestock costs make up almost 50% of the overall average variable costs, with crops constituting 35%. By definition, these costs vary according to outputs, as do the remaining 'other' costs including contractors and paid casual labour;
- Average FBI (incomes minus costs) for all farm types was £50,900. Only £5,600 of this related to the agricultural part (i.e. crop and/or livestock) of business, with net direct payments (i.e. farm subsidy payments based on amount of land) equivalent to 54% of the total (£27,400).

The £50,900 FBI is calculated before unpaid labour costs and potential income taxes. Grazing livestock farms have some of the lowest FBIs, with LFA at £26,800 and lowland at £13,900. Grazing livestock farms are most likely to be managing permanent grasslands, therefore income opportunities from semi-natural grasslands will be most relevant for them.

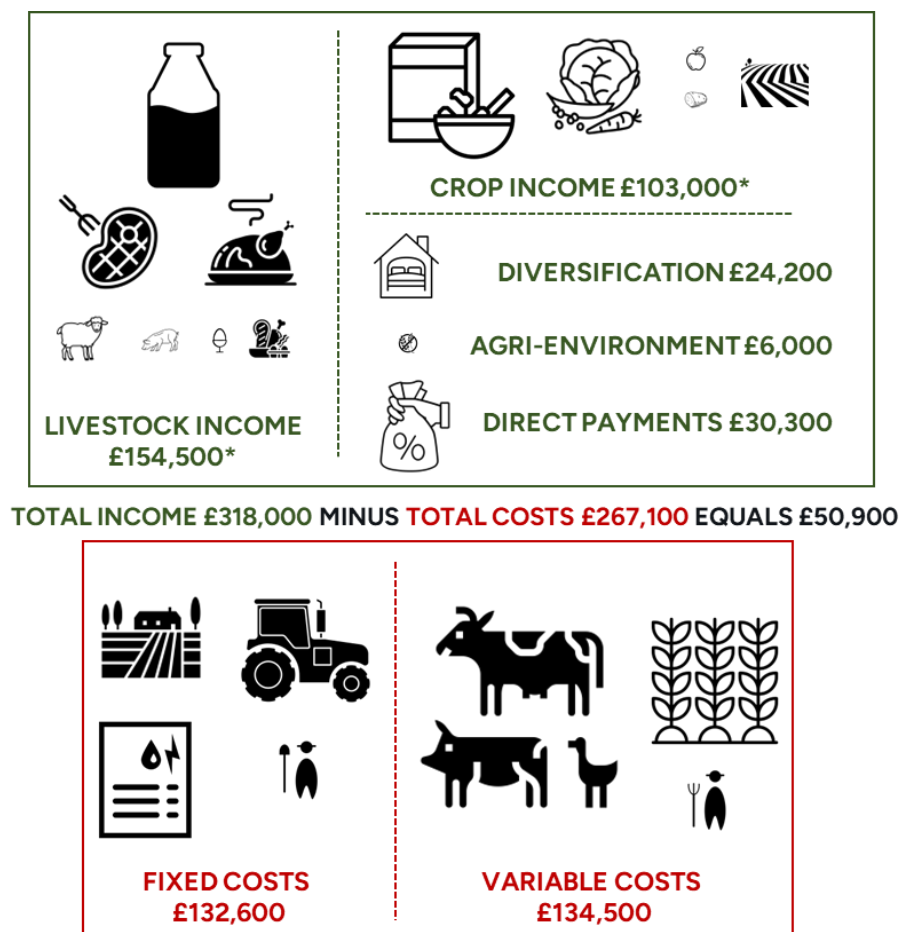
¹¹ This is certainly true for direct payments: it is estimated that application and cross-compliance costs associated with the direct payment element is around £2,900, and so the average net income from direct payments is £27,400. Agri-environment payments are intended to compensate for income foregone and have associated costs for implementation.

¹² One implication of this is that, to the extent that production declines, farmers cannot be expected to transition to nature-positive farming without compensation for fixed costs associated with livestock and/or crop production.

¹³ On average rents constituted £12,900 of the £33,000 property costs. However, many farms have no rental costs and for wholly tenanted farms the average rental payment was almost £30,000.



Figure 2-1: Average Farm Business Income (FBI) breakdown for 2018/2019 to 2020/2021



*The split between livestock and crops is based on 2021 proportions. Overall agriculture income, as with all other estimates in this figure are an average of the years 2018/19 to 2020/21

While the 'average' income and costs provide a general overview for British farms, they can be misleading and often mask the vast disparities arising from farm types (such as arable, dairy, grazing livestock, and mixed), regional differences, and individual management practices. Further discussion of this is included after the concept of 'Total Income From Farming' is introduced.

2.1.2 Total Income From Farming

Where FBI has a focus on individual farm businesses, the Total Income From Farming (TIFF) is a macroeconomic measure of the profits for all those invested in the agricultural production process, including farmers but also landowners and employees¹⁴.

In 2022, the UK's TIFF rose by 17% from the previous year to £7.9 billion. This was primarily due to increased prices for many farm products, which helped offset the rise in production

¹⁴ Defra define TIFF as: "business profits and remuneration for work done by owners and other unpaid workers. It is used to assess UK agriculture as a whole." <https://www.gov.uk/government/statistics/total-income-from-farming-in-the-uk/total-income-from-farming-in-the-uk-in-2022>



costs. Notably, livestock earnings (i.e. including dairy, beef, poultry etc.) increased by 16% to £19.3 billion, driven by a significant 40% jump in milk's value. Milk prices reached an all-time high, partly due to increased production costs that also led to a dip in supply. Beef outputs were £3.8 billion in 2022, a modest increase of 12% compared with the previous year. On the crop side, earnings went up by 22% to £13.3 billion.

Costs, referred to as "intermediate consumption", climbed by 19% to £22.1 billion in 2022. This was largely due to a 24% rise in animal feed costs and a more than doubling (104%) in fertiliser prices, the latter being impacted by reduced production linked to escalating natural gas prices. Nevertheless, agriculture's contribution to the UK's overall economy grew by 15% from 2021, to £13.9 billion, or 0.6% of the country's GDP.

Both FBI and TIFF measure income generated from agricultural activities but at different levels of aggregation. For our purposes, FBI is a more important concept than TIFF, as the focus for this report is on-farm income.

2.1.3 Discussion

The concept of an 'average' UK farm is potentially misleading. Though the average farm size in 2021 was 81 hectares, half of the 216,000 UK farms were under 20 hectares (i.e. the median farm size is about 20 hectares). Smaller farms lack the revenue options larger ones enjoy. A larger farm might profit from crops, livestock, and even renewables, whereas many smaller ones have restricted options. Relying on the 'average' FBI risks masking the financial strains many smaller farmers endure.

In England, across the three years up to 2020/21, the average annual FBI from poultry farms stood at £89,400, with dairy at £88,500. This sharply contrasts with livestock grazing, where direct payments exceeded 100% of FBI; they'd be operating at a loss without them. The average FBI for LFA livestock grazing was £26,800, and for lowland grazing, it was £13,900. While these figures rose in 2021/22, they remain concerning. Future direct payments from agri-environment schemes will be crucial in deciding the profitability and sustainability of livestock grazing farms, including their ability to profit from managing semi-natural grassland.

Recent analyses of farming practices can shed light on farm operations and help farmers understand the impact of this 'high input, high yield' approach, as well as become more resilient to the changes discussed above. For example, the Nethergill Approach highlights that farms can improve their commercial returns if input costs are reduced: by reducing outputs to a level where production relies only on the farm's naturally available resources and essential costs. In other words, whilst overall productivity may be reduced, the reduction in inputs such as fertilisers and feed concentrate makes farms substantially better off, at a point called the "Maximum Sustainable Output" (MSO).

Simultaneously, farming species-rich grasslands using only naturally available resources at the MSO offers significant ecological advantages. Lessening the use of fertilisers, which disrupt grassland species and contaminate watercourses, enables farmers to both profit and foster grassland ecosystems. This method is termed the "Sweet Spot" by the Nature Friendly Farming Network and the Wildlife Trusts.¹⁵

A recent study from Norton *et al.* (2022) provides evidence that pasture-based livestock systems can be economically viable and deliver environmental benefits in Britain. The model of 'optimum production' means working in alignment of each farm's ecological conditions. Norton *et al.* (2022) show that the gross margins of Pasture Fed Livestock Association

¹⁵ https://www.wildlifetrusts.org/sites/default/files/2023-06/Farming%20at%20the%20Sweet%20Spot_1.pdf



(PFLA) beef enterprises were higher on average than conventional systems. However, performance varied, with the bottom third of PFLA farms comparable to conventional farms. There were indications that PFLA sheep enterprises can also be profitable. Factors contributing to economic performance included lower input costs, marketing opportunities and perceived improvements in animal health from pasture-based systems. The research also highlighted the importance of farmer experience and on-farm innovation in optimising both economic and environmental performance.

Pasture-based systems favour these grasslands because they don't rely on heavy fertiliser and chemical inputs, which typically degrade diverse ecosystems. By allowing grasslands to thrive naturally, these systems enhance the soil structure, support insect pollinators, and bolster the overall biodiversity. Pasture-fed livestock also helps maintain a dynamic grassland environment, preventing overgrowth and facilitating different grass species to flourish. Consequently, pasture-based systems optimise both economic and environmental performance, as underscored by the improved margins and nature-friendly outcomes observed in PFLA farms.

2.2 Barriers to nature-positive farming

The Green Finance Institute (GFI, 2023) identify three categories of financial barriers to nature-positive farming. First are data barriers. Banks, supermarkets, and food and beverage companies struggle to access the relevant supply-chain data to pinpoint support opportunities. Farmers face similar challenges, especially in collecting spatial environmental data essential for managing species-rich grassland and satisfying requirements for funding opportunities. These challenges include data collection costs alongside concerns about sharing sensitive information and data ownership. Datasets vary in quality and might have different versions, causing confusion about their appropriateness. While some stakeholders refer to metrics like the Global Farm Metric¹⁶, clearer government guidance on environmental market financing, especially for managing species-rich grasslands, would boost confidence.

Second are confidence barriers. Many farmers are concerned about potential sanctions from the agrifood and financial sectors if they don't meet certain standards or that their commercial data might be misused. This uncertainty deters some from adopting better environmental practices. Ambiguities in carbon pricing (see Appendix One), emerging standards, and long-term contract terms further undermine confidence. Tenant farmers, who form a significant portion of Britain's farms, are unsure about how benefits from carbon credit sales and other markets will be shared with landowners.

The GFI's third barrier relates to implementation. For feasible environmental markets, smaller farmers often need to consolidate their operations for necessary scale. However, there's a gap in guidance and funding for these aggregation models. Uncertainties about tax implications and the lack of guidelines on payment stacking and soil carbon markets hinder the implementation of critical nature-positive practices for managing species-rich grasslands.

Ross *et al.* (2023) identify similar financial barriers and emphasise the challenges arising from the fact that the average age of a farmer in Britain is almost 60, and that just 3% of farmers are under 35 years old. Furthermore, many older farmers are looking to sell their farm business rather than transition to nature-positive farming. The authors make the point

¹⁶ The Global Farm Metric is a global framework to understand, measure and monitor the state of farming systems. Central to its approach is consistent data collection about a range of sustainability factors. Further information can be found on its website: <https://www.globalfarmmetric.org>



that innovation is often driven by new entrants, but that British farming is not well-placed to allow new entrants to the industry.

A recent Dutch study (Vermunt *et al.* (2022)) identified five significant blocking mechanisms hindering nature-positive dairy farming innovation: lack of financial incentives, action constraints, absence of a unifying vision, knowledge obstacles, and regime resistance. These blocking mechanisms echo those highlighted by the GFI and are interrelated, creating a self-reinforcing 'lock-in' scenario that makes transition to nature-positive management of grassland difficult. These blocking mechanisms apply to a greater or lesser extent to Britain, and are outlined below.

Figure 2-2: Blocking mechanisms that hinder the adoption of nature positive farming (adapted from study on the Dutch dairy farming industry)

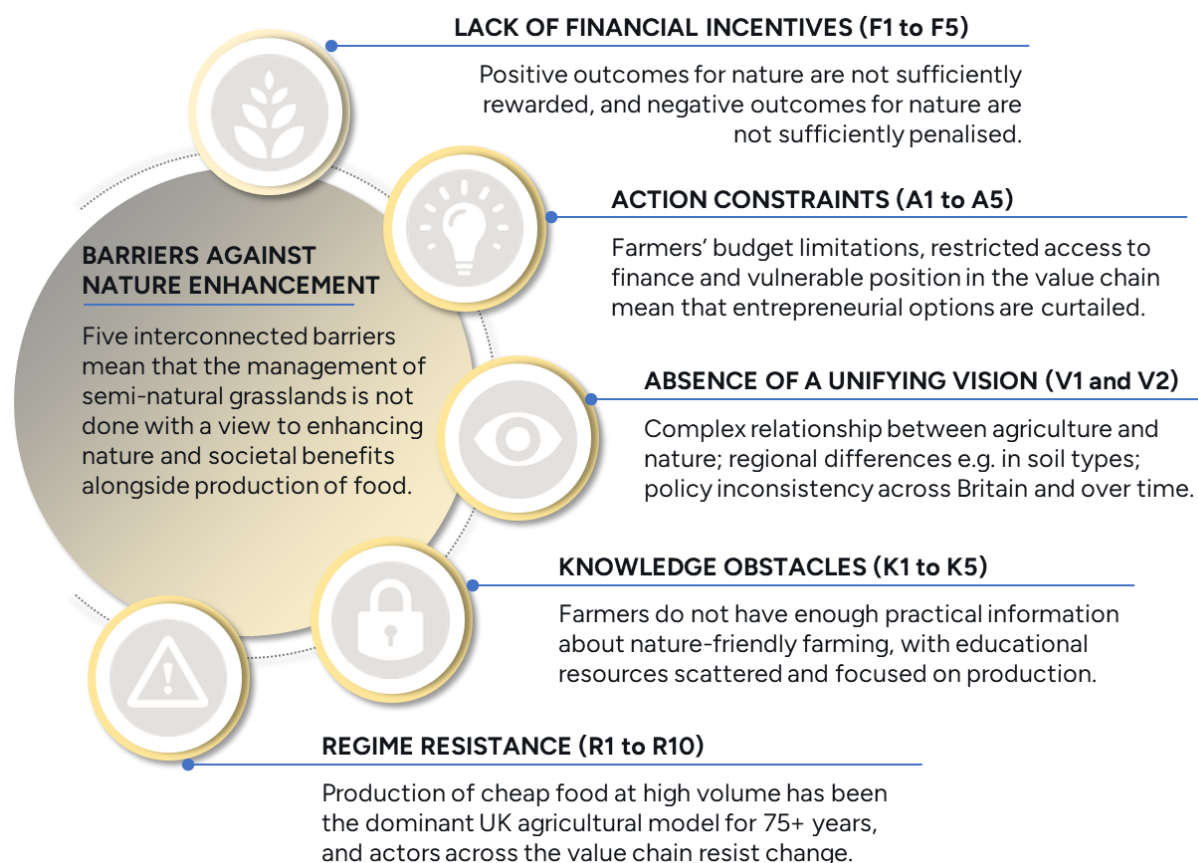


Table 2-1: Summary table detailing the different factors within blocking mechanisms that hinder update of nature-positive farming practices (adapted from study on the Dutch dairy farming industry)

Finance (F)	Action (A)	Vision (V)	Knowledge (K)	Regime (R)
F1: Difficult to coordinate stacking of incentives	A1: Prevalence of short-term lease contracts	V1: Guidance provided from different silos	K1: Biodiversity and ecology are inherently complex	R1: Consumer is unwilling to pay a premium for nature outcomes
F2: Limited markets for ecosystem services	A2: Farmers have a weak position in the value chain	V2: Current vision is ambiguous	K2: Knowledge not holistic and lacking in certain topics	R2: Lack of business case for value chain
F3: Limited penalties for negative externalities	A3: Lack of a transition fund		K3: Knowledge development top-down without farmer involvement	R3: Higher (perceived) risk in nature-friendly business models
F4: Regulation unclear and nature outcomes are not compulsory	A4: Nature-friendly practices can be costly		K4: Lack of independent and non-commercial knowledge providers	R4: Extremely capital-intensive industry
F5: Global markets determine product prices	A5: Banks have difficulty assessing nature-friendly business models		K5: Management indicators for nature-friendly outcomes unclear	R5: High fixed costs
	<i>F: LACK OF FINANCIAL INCENTIVES</i>			R6: Low liquidity of farm businesses
	<i>R3: Higher (perceived) risk in nature-friendly business models</i>			R7: Lack of figurehead farmers
	<i>R4: Extremely capital-intensive industry</i>		<i>A: ABSENCE OF A UNIFYING VISION</i>	R8: Agricultural training not focussed on nature outcomes
<i>R1: Consumer is unwilling to pay a premium for nature outcomes</i>	<i>R5: High fixed costs</i>	<i>R: REGIME RESISTANCE</i>	<i>R: REGIME RESISTANCE</i>	R9: Difference in ambition for various initiatives
<i>R2: Lack of business case for value chain</i>	<i>R6: Low liquidity of farm businesses</i>	<i>K1: Biodiversity and ecology are inherently complex</i>	<i>F4: Regulation unclear and nature outcomes are not compulsory</i>	R10: Lack of coordinated lobbying activity



Parallels with the GFI barriers include financing barriers (F3 to F5; A5; K1 to K5), confidence barriers (F2; A1 and A4) and implementation barriers (F1; A2 and A3; V1 and V2). The key lesson from the Dutch study is that 'regime resistance' is interconnected with all of these barriers, for example the low cost food model (R1 and R2) exacerbates the finance barriers (F1 to F5).

A holistic approach is required to address these issues, which recognises not only the need for innovation but also the transformation of the dominant economic paradigms of growth and yield maximisation for farms.

The 'regime resistance' barrier was found to be a significant challenge for the Netherlands, deeply ingrained and influencing all other barriers. It signifies the inertia of the current 'productivist' model and its inherent aversion to change. This resistance isn't mere obstinacy or reluctance to innovate but results from years of operating a food system focused on producing large quantities of affordable food. This model, characterised by its cost-efficiency and capital-intensive production, has become a cultural staple in the industry. Britain certainly faces a similar challenge, being systemically locked into production often detrimental to nature.

Financial instability hinders farmers' ability to trial novel farming methods, obstructing shifts to nature-positive agricultural practices, such as rotational grazing beneficial for species-rich grassland. Short-term lease contracts prevalent across Britain exacerbate this issue. These contracts curtail farmers' long-term planning capabilities, impeding the adoption of nature-positive practices that typically need an extended period to yield both environmental and economic returns.

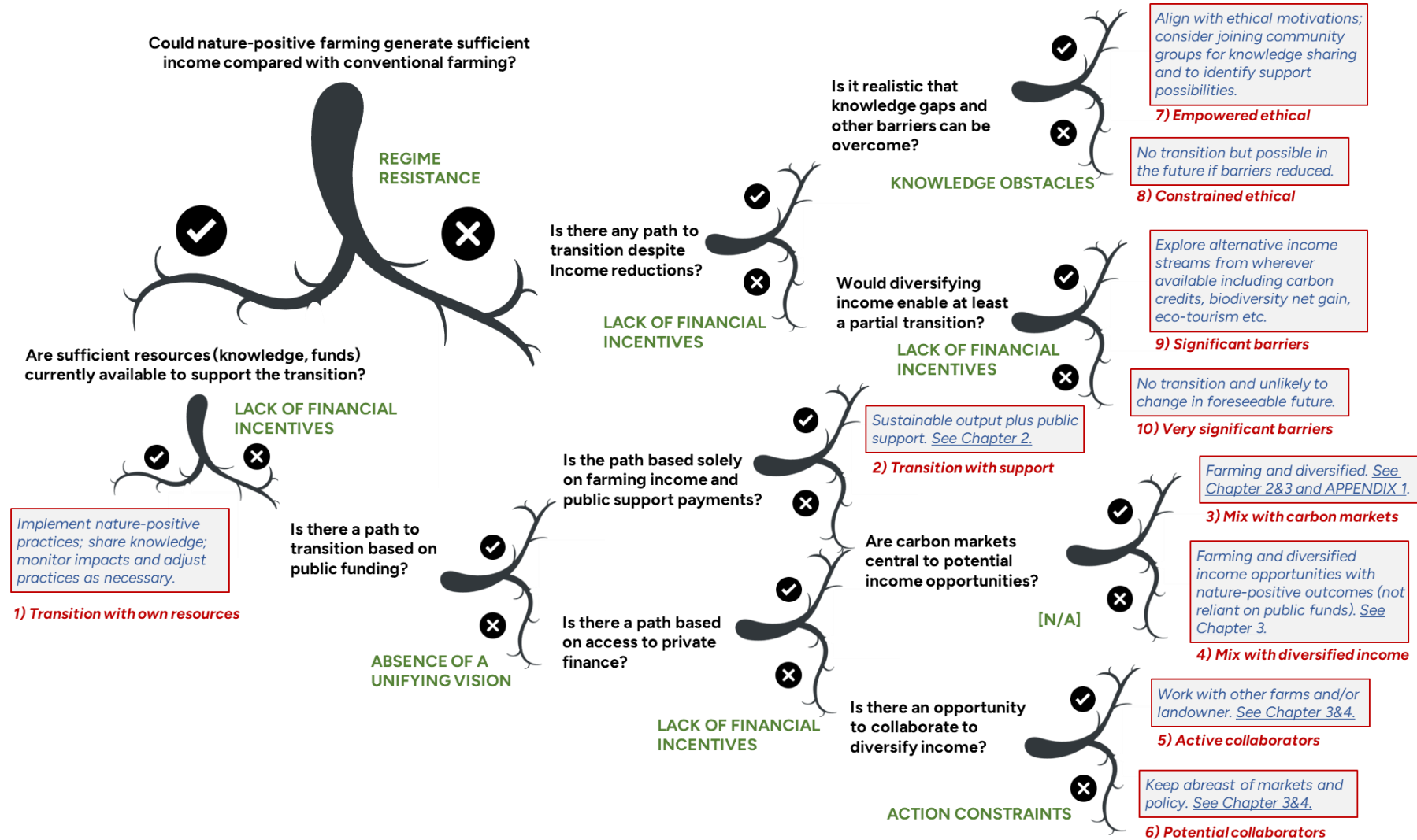
Additionally, the absence of a unifying policy vision for the food system and agriculture industry poses a considerable challenge for farmers. For each devolved nation, agricultural policies and practices are marked by inconsistencies over time, often creating uncertainty. This in part reflects the complex relationship between agriculture and nature; soil types, for instance, can vary substantially across regions, necessitating differing approaches. The visions for England, Wales and Scotland are necessarily changing in response to growing awareness of the global climate and nature crises, though not yet to the extent needed (see Section 2.4).

Knowledge obstacles further complicate the situation. Farmers often lack practical information about nature-positive farming and management of species-rich grassland, and available resources are scattered and primarily focused on production. Transforming this knowledge system is critical for a successful transition to a more nature-positive farming system.

The decision-making context introduced in Chapter One can be augmented to highlight some of the main barriers. Figure 2-3, while again being a simplification and not exhaustive, shows an example of one barrier associated with each negative outcome. For example, if nature-positive farming cannot generate an income at least equal to that from conventional farming, this is a regime that is resistant to a nature-positive transition: incentives are such that nature will continue to be degraded.



Figure 2-3: Decision-making context for farmers' nature-positive options, with identification of barriers at each stage



The remainder of this report will explicitly address these blocking mechanisms, highlighting their interconnections whilst focusing primarily on (the lack of) financial incentives for nature-positive farming. Detailed exploration of these elements will underpin our analysis; from the difficulty of coordinating financial incentives and limited markets for ecosystem services, to the unclear regulations and the influence of global markets.

The aim of this report is to offer intervention points to accelerate the transition towards nature-positive farming in Britain, recognising the need to shift the broader structures and institutions of the dominant agri-food regime.

Without suggesting that this is typical for British farmers, we begin with a case study of a farm that fits a best-case scenario, namely the 'Transition with own resources' category shown in Figure 2-3.

Case Study

Farmer Emma promotes nature-positive farming, is not registered in any agri-environment schemes, and achieves a profit per hectare of over £500 through grazing beef cattle sold direct to customers or through a local food co-op.

Farm Name	Long Oaks Gower Meadow Beef, Gower, Wales
Farm size/tenure	27ha owned with common grazing rights, 50ha under grazing agreements mostly with Wildfowl and Wetlands Trust (WFWT), across Gower Peninsula and SW Carmarthenshire.
Enterprise type	75 head beef cattle – Sucklers through to finishing. Welsh Blacks, Dexters and Belted Galloways. All sold direct to customers or through FarmCo (local food coop). Around 18 head sold this way each year.
Business structure	Family owned, no employed staff.
Grassland types	Neutral grassland on farm also managing marshy grassland, fen, dune grassland, coastal heath and grassland on nature reserves.
Profit per hectare	£518.52/ha on home farm, £194.44/ha over whole area farmed, not including any SFP. Not in any agri-environment schemes.
Favourite plant/management outcome/place on farm	Most satisfying is the hay meadows – beautiful and species rich. Plant assemblages rather than specific species appeal most, although Emma does like to see certain rare species and interestingly has noticed a rare arable plant, corn spurrey, appearing on the high traffic areas on old arable ground around the farm.

Gower Meadow Beef is built around conservation grazing, its unique selling point is the biodiversity of swards that cattle are reared on, therefore everything is managed to promote and encourage biodiversity. On farm this has centred around restoring ryegrass leys and arable fields back to species-rich grasslands.



The motivation to change the management approach 16 years ago was focused on cutting the input costs, an interest in conservation, and seeing what could be done on other farms. This complemented keeping native breeds and producing a higher nutrient value meat.

The challenges have been Bovine Tuberculosis and a drop in productivity. In 2008, 18 large round bales/hectare were produced, in the last five years it's around 12 bales per hectare per year. However, the reward is seeing increasing sward biodiversity, and all the wildlife this supports, as well as lower input costs. The stock also prefer species-rich hay made on farm than any bought in ryegrass hay.

Management:

Hay meadows are closed 1st March, cut in July and aftermath grazed in Dec/Jan. The seed bank has spread across the farm over the years. Other fields are paddock grazed (3 day moves, 28+ days rest) and bale grazed in winter. Cattle are usually kept out on conservation grazing areas as long as possible, before coming home for winter. Stopped having sheep on tack about 6-8 years ago and have since noticed more woodland species creeping out into field margins. Long rest periods are very beneficial for species-richness but drought and high stock rate, due to TB, in last 2 years has put pressure on fields.

The conservation ground away from the farm is managed and grazed according to the specific conservation objectives, which may be specific species, such as lapwing, or sward species and habitat diversity.

Benefits:

Emma says it feels good to see the increased biodiversity, including wildlife and plants due to the change in management. The Gower way footpath cuts through farm and it is very aesthetically pleasing when in flower.

Animal health has benefitted, and veterinary costs reduced. Anthelmintic use is very minimal which provides healthier dung for insects. There are lesser and greater horseshoe bats on farm, so helps their food source too. Swallows love the tall grass, as do hares.

Financially, the lower inputs are a cost saving and this type of nature-positive management is a USP to support direct sales.

Surveys:

Farmer led species surveys have identified that the neutral hay meadows have key indicators such as extensive yellow rattle, crested dogs' tail, red clover, common birdsfoot trefoil, meadow vetchling, common sorrel, ribwort plantain and common knapweed. They have altered over time from a yorkshire fog, creeping buttercup, white clover and ryegrass sward.

Establishment and management costs:

Emma has allowed the existing seed bank to develop through no inputs, traditional hay meadow management and tall grass grazing/long rest periods. Reduced yield has been a cost, but this is balanced by not spending on inputs. They have tried some bale grazing with homemade species rich haylage but negligible seed establishment, possibly due to it being wrapped. They have a steep bank which has acted as a great seed bank reservoir for the farm.

Future plans:

TB eradication! Take on more land to re-establish tall grass grazing and reduce pressure on home holding. Add farmyard manure to hay meadows. Soil health testing and react appropriately - invested in an aerator to combat surface compaction and a plough pan caused by arable farming. Interested in topical applications with aerator.



2.3 Existing policy support for nature-positive farming

Farming and environmental policy is at a crossroads following the UK's exit from the EU. Agricultural policy is managed individually by each of the four UK nations, leading to distinct policies and legislative frameworks. The industry faces increasing pressure to provide food security and protection of the UK's natural environment, whilst also maintaining economic viability. The departure from EU rules presents a unique opportunity in each country for nature-positive farming practices.

As introduced in Chapter One, agri-environment schemes have to date been the primary mechanism to encourage nature-friendly farming. However, payments have been based on the principle of compensation for lost earnings, framing the situation as one in which being 'nature-positive' would otherwise be costly. Uptake of agri-environment schemes have varied considerably between schemes, between different farm enterprises and in different parts of the UK.

The results for nature have also been found to vary considerably, where appropriate monitoring has enabled measurement or approximation of the outcomes. The evidence suggests complex patterns of outcomes for different habitats and species. The most targeted agri-environment measures have demonstrated positive outcomes for some target species¹⁷. However, for many species and most habitats the outcomes approximate at best to 'holding the line' - slowing or stopping continued decline in habitat extent and condition but doing so in a fragmented patchwork of habitats and farms, modest in extent, and in a landscape matrix where declines in nature continue¹⁸.

Policies could be restructured to provide financial rewards for nature-positive farming, tackling the current lack of such incentives. This approach could disrupt the 'regime resistance', helping to shift from the entrenched 'productivist' model to a more ecologically friendly paradigm.

One way to understand the transition is to frame the problem in terms of 'public goods'. In economic terms, public goods are items that individuals cannot be excluded from using, and their use by one individual doesn't reduce the availability to others. Public goods are typically not provided, or are insufficiently provided, through markets because of the challenge in getting beneficiaries to pay for them directly. Think of clean air, public parks, or a stable climate; these are all examples of public goods which in many parts of the world are underprovided.

Farming, while principally a means of producing food (a marketable commodity and not a public good) is also intricately connected with the delivery of public goods. The way we manage farmland can contribute significantly to providing public goods. Sustainable maintenance of grasslands regulates climate by sequestering carbon and reducing emissions. They bolster biodiversity, offering wildlife habitats and upholding ecosystem balance. Moreover, they assist in water management, curbing runoff and erosion.

In the UK, post-Brexit policies, especially the Agriculture Act 2020, prioritise "public money for public goods", valuing farmers not just as food producers but as custodians of the environment. This reframing is key for driving innovation towards nature-positive farming.

Food security refers to the state of having reliable access to a sufficient quantity of affordable, nutritious food¹⁹. It's a crucial issue that directly influences the health and

¹⁷ See for example, a review from the British Trust for Ornithology: <https://www.bto.org/our-science/case-studies/assessing-agri-environment-schemes>

¹⁸ See: <https://www.sciencedirect.com/science/article/abs/pii/S0006320703001460>

¹⁹ There are various definitions. For example, The World Bank defines it in terms of availability, access and utilization over time: <https://www.worldbank.org/en/topic/agriculture/brief/food-security-update/what-is-food-security#:~:text=Based%20on%20the%201996%20World,an%20active%20and%20healthy%20life.>



wellbeing of individuals and communities. However, food is not a public good. It is excludable (those who don't pay can be prevented from accessing food) and rivalrous (if one person consumes food, it's no longer available for others). Thus, while ensuring food security is a vital policy goal, it's achieved primarily through the market, with interventions such as income support, food aid, and regulation of safety standards. Over four fifths of food consumed in the UK in 2021 was from the UK (58%) or the EU (23%)²⁰ and, with the exception of fresh fruit, the UK does not rely too heavily on imports²¹.

Therefore, while both food security and the provision of public goods are crucial aspects of agricultural policy, they are not mutually exclusive and work on different principles. Recognising this distinction is key to shaping effective strategies for a sustainable, nature-positive, and food-secure future. Whilst recognising the importance of food security, this report is about the transition to nature-positive farming.

2.4 Public payments for farming

British farmers received about £4.3 billion annually under the CAP (2019 figures) with over 80% being 'direct payments' based on farmland size. As noted in Section 2.1, data indicate that many UK farms would not have been profitable without CAP support. In 2018, without direct payments, Defra estimated about 42% of farms would have had costs exceeding their revenue. As also explored in Section 2.1 the significance of support payments varies by sector and geography, with hill farmers in Wales being more reliant on CAP payments, for example, than poultry farmers in England. In general, farmers managing permanent, species-rich grasslands are more likely to be financially dependent on CAP payments.

In post-Brexit agricultural policy reforms, England, Scotland, and Wales share certain commonalities, such as the phased withdrawal of area-based direct payments and the intention to provide public money for public goods. Unfortunately, complexities remain for all three countries as well as uncertainty of how the schemes will work through the next few years of transition.

2.4.1 The transition in England

Outlined in "The Path to Sustainable Farming: An Agriculture Transition Plan 2021 to 2024," the UK government's envisioned sustainable farming model aims to make farms economically viable without subsidies, encouraging innovation and efficiency. Key changes involve the phased withdrawal of area-based direct payments, lowering and ultimately removing import tariffs on food, and providing grants to farmers who invest in productivity-enhancing equipment and infrastructure. Agri-environment payments are being developed to incentivise farmers to deliver public goods. Options for farmers wishing to exit the industry included the possibility of a one-off "lump-sum" payment (though this option ended in September 2022).

Defra is phasing in the new model over a seven-year agricultural transition period ending in 2027. The phasing out of Direct Payments began in 2021, with the largest cuts being made to the highest claims. The Environmental Land Management Scheme (ELMS) is a key part of Defra's new model, split into three parts: the Sustainable Farming Initiative (SFI), Countryside Stewardship (CS) (referred to initially as Local Nature Recovery), and

²⁰ <https://www.gov.uk/government/collections/agriculture-in-the-united-kingdom>

²¹ Formally, the 2021 'food production to supply ratio' in the UK was 74%. This is an indicator of UK agriculture to meet domestic customer demand.



Landscape Recovery (LR). By 2028, Defra have said that they expect spending to be evenly split across farm-level (SFI), locally tailored (CS), and landscape-scale (LR) investment²².

Critics of the plan, including various organisations in the conservation and NGO sector, have voiced concerns that the model lacks ambition, arguing for example that the SFI schemes do little to address the climate and nature crises. They argue that the opportunity to reward farmers for undertaking more substantial measures, such as pollutant control, has been missed. Nonetheless, Defra aims for at least 70% of farmers to take up SFI agreements.

In June 2023, Defra published the SFI Handbook²³ (updates published in August 2023), detailing the various ways and amounts that farmers will receive for farm-level actions related to the environment. Eligible land includes 'low input' permanent grasslands (LIG1 if outside a 'Severely Disadvantaged Area' and LIG2 if inside), where payments of £151 per hectare will be made to foster the growth of flowering grasses and wildflowers.

To qualify for this support, several actions must be undertaken: apply no more than 12 tonnes per hectare of cattle farmyard manure or equivalent amounts of in the form of fertiliser or other organic manures as alternatives; manage the land in a manner that encourages grazing or cutting that can reasonably be expected to achieve the goal of fostering flowering grasses and wildflowers; and minimise the amount of bare ground by maintaining a covering of vegetation, preventing direct exposure of the soil to the elements.

The payment rate of £151/ha for LIG1 and LIG2 is significantly lower than many other SFI options. For example, SAM3 for herbal leys pays £382 per hectare and requires establishing a mix of grasses, legumes and herbs. IPM2 for flower-rich margins pays £673 per hectare and involves sowing a more diverse wildflower mix, legume fallow (NUM3) receives £593/ha, and winter bird food on arable land (AHL2) receives £732/ha.

The requirements to qualify for LIG1/LIG2 are reasonably substantial and represent a significant change in management practices for many farms. In contrast, some other SFI options like multi-species winter cover crops under SAM2 have less onerous requirements, simply needing a two-species mix to be sown and left over winter. Yet SAM2 receives £129/ha, almost as much as the £151/ha for LIG1/LIG2.

The low payment rate for LIG1/LIG2 provides little incentive for farmers to convert improved grassland to low/no input status. Improved grassland can still receive £102/ha for including some legumes under NUM2. The additional £49/ha on offer under LIG1/LIG2 is unlikely to motivate significant change in management. The LIG1 and LIG2 actions can be combined with basic soil assessment (SAM1) or integrated pest management (IPM1) on the same land, but many other potentially complementary options can't be integrated. The SAM1, IPM1 and NUM1 options are assessment actions only, associated with very modest lump-sum payments²⁴.

Options LIG1/LIG2 cannot be rotational actions; they must be done on the same area for the three years of the SFI agreement. The restrictions on combining LIG1/LIG2 with other options limit the flexibility for farmers to tailor integrated packages of SFI actions to achieve the greatest environmental benefits. More compatibility with other SFI actions would allow LIG1/LIG2 to be part of comprehensive, whole-farm approaches to sustainable land management.

In summary, the low payment rates on offer for low/no input grasslands, when compared to other SFI options with less stringent requirements, seem to provide inadequate incentives for

²² <https://www.gov.uk/government/publications/environmental-land-management-schemes-outcomes/environmental-land-management-schemes-outcomes>

²³ <https://www.gov.uk/government/publications/sfi-handbook-for-the-sfi-2023-offer>

²⁴ SAM1 £95 per agreement (plus £5.80 per hectare); IPM1 £989 for the assessment and plan; NUM1 £589 for the assessment and report.



farmers to convert to and maintain species-rich grasslands. This represents a missed opportunity for biodiversity and the multitude of other public goods that grasslands can deliver. To better reward the environmental benefits of species-rich grasslands, higher payment rates commensurate with the costs of delivering such vital public goods, are required. Delays to the SFI payments²⁵ are undermining policy objectives, and are another significant barrier to the transition.

According to Defra, from 2023, 'CS Plus' will reward farmers for coordinated climate and nature conservation efforts in collaboration with neighbouring farms and landowners, and will include capital grants where appropriate. The scheme will cover a broad range of targeted actions aimed at achieving environment and climate goals. These actions include floodplain management for flood risk reduction and biodiversity improvement, peatland restoration for carbon capture and storage, and woodland enhancement for drought mitigation and climate change resilience. It also incorporates targeted wildlife recovery and reintroduction measures. The scheme will extend the offer of the England Woodland Creation Offer after its closure. The 'Countryside Stewardship grant finder' page lists 52 grants for grasslands²⁶ but many aren't specific to managing species-rich grassland.

According to Defra, by next year CS Plus will provide improved services, enabling farmers and land managers to join and manage their agreements more flexibly and access high-quality advice. There will be an increased focus on integrating 'Higher Tier' options and agreements into the broader scheme and improving tenant access. CS Plus aims to particularly target actions in areas where they can have the most significant impact.

Over twenty projects receiving funding in the first round of the 'Landscape Recovery' scheme in September 2022. Some of these included a focus on grasslands including Breckland Farmers Wildlife Network²⁷ which recreates positive impacts for semi-natural grasslands by ploughing, rotovating and turf stripping. Another project that received funding was The North East Cotswold Farmer Cluster²⁸ which includes species-rich grasslands as one of its priority habitats. Defra has also confirmed the launch of the second round of the scheme in 2023. This aims to fund up to 25 large-scale (between 500 and 5,000 hectares), long-term projects to enhance the natural environment, focusing on net zero goals, protected sites, and habitat creation.

The UK government's plan for England, as outlined, does make steps toward addressing some of the five blocking mechanisms, although its effectiveness remains uncertain. The approach may be seen as a form of action enabling, by potentially easing some financial limitations and providing some incentives for innovation. However, the complexity of the scheme, its staged implementation, and its varied initiatives amplify knowledge barriers. Finally, while the government's plan offers a vision for sustainable farming, the critique of its lack of ambition on the environment suggests it does not represent a unifying vision, nor address the systemic issue of regime resistance, particularly for species-rich grasslands. Therefore, while the new schemes provide some solutions, they also underscore the need for a more comprehensive and ambitious approach.

A case study from Yorkshire in England follows, and this exemplifies the 'Transition with support' category of farmer per Figure 1-2 and Figure 2-3, albeit with agri-environment scheme support based on rules before the changes described above.

²⁵ See for example the 2023 payments expected in August 2023 are likely delayed until 2024 due to IT issues <https://www.theguardian.com/environment/2023/aug/25/farmers-england-unsure-plant-post-brex-it-payments-delayed> (accessed 25 August 2023)

²⁶ https://www.gov.uk/countryside-stewardship-grants?land_use%5B%5D=grassland (Accessed on 14 July 2023, and with the 'grassland' land use filter only selected.)

²⁷ <https://brecklandfarmerswildlifenetw.org/>

²⁸ <https://www.cotswoldfarmers.org/about>



Case Study

At Hilltop Farm, North Yorkshire farmers Leigh and Neil realised that 20th century management techniques learnt by working on conventional farms and through generational knowledge were not delivering a profitable or nature-positive farm. Through changing their farming practices they reap benefits of more profitable livestock and eligibility under Stewardship payment.

Farm Name	Hilltop Farm, Malham, North Yorkshire
Farm size/tenure	Owned. 1,200 acres overall: 350 owned by Neil's parents, 200 owned by Neil, 600 acres rented across four or five different tenancy agreements of varying levels of formality.
Enterprise type	Traditional upland beef and sheep - beef sold direct with some store cattle sold to a lowland farm for fattening.
Grassland types	Upland limestone pasture and haymeadow, some areas are millstone grit.
Favourite plant/management outcome/place on farm	Leigh: The return of life to the farm, insects, botanical life. Because we have insects we have birds; because we have long grass we also have voles and barn owls. Neil: Knowing that our food production isn't impacting the wildlife but that they are complementary to each other.

Photo 1: © Gail Caddy



Hilltop Farm was bought by Neil's parents in 1950 and managed conventionally, aiming for high levels of productivity. Neil went to agricultural college and worked on a variety of conventional farms until returning to work full time at Hilltop in 2001, where he continued reseeded and fertilising upland pastures, draining hay meadows, and buying in tonnes of animal feed in pursuit of excellent animals for showing and sale. At their peak they lambed around 800 animals. In 2003/04 Neil and Leigh joined a Limestone Country Project; a conservation grazing scheme which the pair credit with prompting their transformation, as they saw how changing their grazing strategy could change the botanical species present.

The main levers were a reduction in stocking, increasing cattle numbers, and reducing grazing at certain times of year. Much of it is historical and traditional management practices that have been lost over the 20th century in favour of high production. Some of their management is dictated by the stewardship schemes they're in, but they frequently go above and beyond requirements. For example, if required not to cut or graze between mid-May and mid-July, they might not return to an area between March and August.

As a result of this, and over time, they have increased their cattle numbers and decreased their sheep; having started with 20 belted galloways they now have 180-200 cattle (belted and riggit galloways) and less than a hundred breeding ewes.

The main financial benefits come from operating a very low-input system; while stewardship payments have made the business more viable, the livestock are profitable in their own right. From a social perspective, both Leigh and Neil described the old system as a "pressure cooker" with the livestock always being pushed to get bigger, faster, requiring regular interventions - a high stress environment for both livestock and farmworkers. Now that the animals live a semi-wild existence, Neil is able to manage the farmwork himself, apart from two part-time workers who assist him on a Thursday.

Some surveying was undertaken as a requirement of entering Countryside Stewardship, and they graze some areas of National Trust land which the Trust collects data for. Last year a BioBlitz survey was undertaken, so they now have data for management.

Neil and Leigh have found that by going back to more traditional methods of farming has resulted in a greater profitability. Nature is not a byproduct of their profitable business; it is the forefront of the decision-making process and that has resulted in greater profitability.

Photo 2: © Gail Caddy



2.4.2 The transition in Scotland

The Agriculture Bill in Scotland is slated for introduction by the end of 2023. It aims to tackle key challenges in the farming sector, such as overgrazing, soil erosion, and biodiversity loss from intensive farming. The Scottish Government acknowledges the need for changes to the distribution of farming budget and support mechanisms, with a majority of the budget currently being allocated based on land ownership. Per a route map published by the Scottish Government in June 2023²⁹, this situation is likely to continue in 2024, with 2025 being a transition year before direct payments end in 2026 (the current Agri-Environment Climate Scheme will also end in 2026).

The bill will introduce, from 2026, a tiered support system:

- **Base Tier:** Provides stability support, on the condition of meeting some basic 'essential standards', with the possible introduction of 'Whole Farm Plans' to promote sustainable, efficient, and resilient farming practices.
- **Enhanced Tier:** Offers financial incentives for adopting sustainable and regenerative farming practices.
- **Elective Tier:** Targets funding for climate mitigation and nature recovery projects (2027 launch).
- **Complementary Tier:** Provides support services to farmers undertaking actions required under the first three tiers, including knowledge development and measurement tools (2027 launch).

As of September 2023, it's unclear how the AES will specifically support nature-positive actions for Scottish farmers. The Scottish Government's approach aims to transform agriculture in the country, moving towards a more equitable and efficient system that is also environmentally conscious. While the aim is ambitious, the success of these initiatives will largely depend on the implementation, support from the farming community, and the mechanisms put in place to monitor and manage progress. As in England, the practical implementation of complicated rules cannot be assumed, and without significant financial and technical support, many farmers will struggle to understand how to best respond.

2.4.3 The transition in Wales

The Welsh Government's reforms aim for complete transition by 2025, as detailed in the Agriculture (Wales) White Paper. This emphasises Sustainable Land Management (SLM) as a principal goal for farming support. The proposed SLM will replace existing support schemes with the Sustainable Farming Scheme (SFS), a business improvement programme rewarding farmers for societal outcomes achieved through sustainable food production.

The proposed SFS includes a set of 'Universal Actions' that go beyond regulatory requirements and 'Optional' and 'Collaborative Actions' for additional support. The scheme will reward farmers for improved outcomes like healthier soils, clean air and water, improved biodiversity, and actions to help tackle climate change. The implementation of these changes is marked by several milestones, with the scheme expected to open in January 2025. In the meantime, an interim agri-environment scheme for 2024 was announced in July 2023. Details, including timing of the application window were not available at the time of writing (September 2023).

A case study from Elan Valley in Wales follows, and almost half of their income comes from the Glastir Advanced Agri-environment scheme, which is being phased out in December.

²⁹ <https://www.ruralpayments.org/topics/agricultural-reform-programme/arp-route-map/>



Case Study

Farm Name	Troedrhiwdrain, Elan Valley, Mid Wales
Farm size/tenure	Troedrhiwdrain is one of 28 AHA tenanted farm holdings on the Elan Estate, managed by Elan Valley Trust. The Lewis family have been on the farm for 3 generations.
Enterprise type	580ha hill farm with 600 hefted Elan Valley-type Welsh Mountain breeding sheep and 30 Torddu Badger Faced ewes. Lambing outside in April. Also, small native breed suckler herd (4 cows, bull and youngstock). Cattle sold as stores or breeding replacements.
Grassland types	The open hill is acid grassland and peatland. The in bye land consists of Rhos pasture, species rich hay meadows and Ffridd areas.
Favourite plant/management outcome/place on farm	Brian - water forget-me-knot. Sorcha - eyebright, saw wort on Rhos pasture and mountain pansies on dry banks.

Troedrhiwdrain is a traditional hill farm. The sheep spend most of the year on the hill. The hogs return from wintering in April and graze off the hay meadows for a few weeks before going up to the hill. All the hay fields are shut off by 1st May and are cut July – September, depending on weather. The hay is fed to stock during the winter.

Cattle graze the Rhos pastures until the end of May, the late shut off benefits more flowering plants, and cattle trampling is good for marsh violet and reducing rushes, then they are managed on the hill with No Fence collars, to help reduce molinia and bracken. The cattle come down to graze the aftermath in the hay meadows early Autumn.

The farm is a high nature value farm and over generations nature has been an integral part of the whole system. The landscape and farm's natural stock carrying capacity dictate how to farm the land to maintain a balance between nature and productivity.

The flower and herb rich hay meadows, which are the central hub of the farming system are hugely beneficial for soil, wildlife, livestock and provide a genetic bank of diversity for the future. They also provide resilience against climate change and biodiversity loss. Sorcha believes they are a huge value to the farm system, local community and the landscape but it's hard to put a figure on it.

The farm has been surveyed many times, including a recent Heritage Lottery Funded in bye land survey of all the tenanted farms on the estate in 2022, carried out by PONT, which demonstrated that there is considerable biodiversity on all the farms. Sorcha has counted orchids every year on the farm for 20 years and the meadows are monitored for pH and organic matter. The NRW also surveys the SSSI's periodically.

Historically, under headage payment schemes the farm carried close to 1200 breeding ewes, this put pressure on the land and depended on importing inputs such as feed and hay to maintain the animals. There were also much higher veterinary costs, increased mortality and smaller lambs. More recently, the farm has been in the Glastir Advanced Agri-environment scheme, and 13ha of the hay meadows also have SSSI status. The scheme places prescriptions on hay meadow management and stocking allowance on the hill during winter. A hay cut must be taken annually, and no inputs are permitted. The way the farm is managed under this scheme brings significant nature benefits. Glastir payments provide 40% of total farm income. Sorcha believes that future schemes need to pay to continue to farm in this way.



3.0 Diversified income options

As discussed in Chapter Two, an ‘average’ farm earned gross income (i.e. before costs) of approximately £6,000 from agri-environment schemes and £24,000 from diversification, in comparison to income of £257,000 from crop and livestock outputs.

This chapter provides a pragmatic assessment of income diversification opportunities associated with semi-natural grasslands. Diversification can aid nature-positive farming but requires judicious assessment of costs, risks and trade-offs. The transition will likely involve creatively stacking income streams and collaborating through models like farmer clusters.

Some diversification options have been available for decades, such as those related to tourism and renewables. Others are emerging from the evolution of private and public natural capital markets. Private markets are poised to gain traction as businesses aim to mitigate their ecological impacts. For example, the Taskforce on Nature-related Financial Disclosures (TNFD) and the Science Based Targets Network (SBTN) initiatives require businesses to understand and lessen their impacts on nature – of relevance to farmers, the SBTN ‘Target 2’ relates to reducing land footprints, and in doing so provides an incentive for companies to source agricultural products that reduce the amount of land required.

Large corporations such as supermarkets and banks might be subject to these requirements. In the future, supermarkets could demand their suppliers show proactive measures for nature, while banks could have similar demands for green financing. Yet, private natural capital markets encompass a vast range of natural processes, from flood mitigation to nutrient management and biodiversity. These private markets and other potential income streams vary in relevance and applicability to managing species-rich grassland and nature-positive livestock farming.

Several of these schemes are introduced in Table 3-1. Suitability for each option is classed as “low”, “moderate” or “high” based on available information, discussed in detail in each sub-section, and ranked in comparison with the other schemes available. For example, where ‘low’ suitability for small farms, this can be taken to mean that collaboration with intermediaries and/or other farmers will likely be needed to make this a viable option. Similarly, where ‘low’ applicability for tenant farmers, this means that the option might be applicable, but likely only in collaboration with the landowner(s).

The alternative income streams outlined carry various implications for farmers, and all include contributions from private finance. Semi-natural grasslands managed for nature can provide a wealth of ecosystem services for which farmers can potentially receive income. Understanding which are the most profitable, meet the farmer’s needs, and are suitable for the grassland types on the farm, are all important considerations. From a practical perspective, for each type of scheme outlined above, farmers should consider the following factors:

- What activities is the farm suitable for (e.g size, physical geography, soil type and quality)?
- What are the set-up time and effort implications of each scheme?
- What are the ongoing management costs and long-term implications of each scheme?
- What is the competition and market demand?

In Figure 1-2 and Figure 2-3 these questions are pertinent at various points, for example to assess whether a nature-positive transition can be based on access to private finance. Each income stream from Table 3-1 is discussed below, along with any considerations or potential unintended consequences of each specific scheme.



Table 3-1: Summary table of diversification options available to farmers, and their applicability for grassland management

Income Stream	Current Status	Suitability for small farms	Suitability for tenant farmers	Applicability for grassland management	Applicability across the UK
Biodiversity Offsetting (Biodiversity Net Gain)	New but existing market set to expand rapidly after November 2023 when BNG becomes mandatory.	Low	Low – landowner agreement needed for long timescale (30+ years)	Grassland creation and enhancement is supported in the metric.	England only
Nutrient Neutrality	Market in existence but future uncertain over government legal challenges	High	High – short term options available, though some for 125+ years	Grassland creation and restoration is one option, but there is also an emphasis on wetland creation, e.g. reedbeds	Differing schemes across England, Wales and Scotland
Certifications and added value	Well established certification schemes available across the UK	Moderate – fixed/non-scaled costs may not be covered by added value uplift	High	Many certifications relate to animal welfare or other aspects of agricultural management, as opposed to managing species rich grasslands	UK
Existing carbon codes (Woodlands and Peatland)	Recently developed but fully operational codes for woodland and peatland habitats.	Moderate as some fixed/non-scaled costs are involved	Low – landowner agreement needed for long timescale (30+ years)	Disincentivises grassland management as these codes promote woodland and peatland creation and restoration	UK



Income Stream	Current Status	Suitability for small farms	Suitability for tenant farmers	Applicability for grassland management	Applicability across the UK
Soil carbon codes and Schemes	Numerous private soil carbon schemes are live or in development, but lack standardisation or a strict “code”.	Moderate as some fixed/non-scaled costs are involved	High – short term options available	Could promote grassland management and conservation, provided measurements accurately reflect grassland’s carbon value (e.g. depth of measurements)	UK
Solar and other renewables	Well-established.	Low	Low – landowner agreement likely needed	May promote grassland creation (e.g. conversion of arable land to solar farms) but also reduce areas for species-rich grasslands if solar panels established on existing pasture.	UK
Agroforestry	Some existing uptake	High	Moderate – long timescales	Grassland species composition may alter or areas planted for agroforestry may eventually transition to woodland habitats.	UK
Leisure and Tourism	Well-established	Moderate – depending on approach	Moderate – depending on approach	May reduce incentives for species-rich grassland management, e.g. in conversion to camping grounds. May also incentivise grassland management for aesthetic value.	UK



3.1 Biodiversity Net Gain – Biodiversity Offsetting

Biodiversity Net Gain, a key feature of the Environment Act 2021, requires all developments from November 2023 in England to result in a 10% net gain in biodiversity when compared to its baseline value prior to development, through use of a statutory metric tool that quantifies “biodiversity units”. Developers have the option of achieving this onsite, i.e. within development footprints, or through off-site delivery mechanisms if there is a shortfall of biodiversity units at the site. This offsetting of biodiversity units from developments will require purchase of “biodiversity credits” that demonstrate unit uplift through creation or enhancement of habitats, improving their ecological condition.

The introduction of this mandatory requirement presents an opportunity for farmers and landowners to restore habitats to generate credits for the BNG Market. In particular, grasslands are a broad habitat type that scores well in the metric, as penalties are low in comparison to other habitats (such as woodland) for the time it takes the habitat to reach the target ecological condition, and the difficulty of creation³⁰. In the most recent metric iteration, Biodiversity Metric 4.0, creation of one hectare of good condition “other neutral grassland” habitat scores eight Biodiversity Units, compared to one hectare of lowland mixed deciduous woodland creation scoring 1.9 units.

Whilst this regulatory requirement applies to England only, the devolved nations have shown commitment to ensuring developments result in a net gain in biodiversity, and may develop similar tools and policy updates in due course.

English farmers have several options with regards to biodiversity net gain and managing their grasslands. Farmers can sell biodiversity credits directly to developers, or through the use of a broker – that could be provided privately or through local planning authorities – or through input into a habitat banking organisation that will store the credits for future use on several developments, rather than being earmarked for a particular development project. Payment for such credits is expected to cover the long-term management of the site for habitat creation and restoration for at least a 30-year period.

The area earmarked for biodiversity credit creation would be subject to a baseline survey to assess its current value: should high-distinctiveness or good condition habitats exist already, the capacity to provide biodiversity uplift may be limited. During the brokerage or transaction process for biodiversity credit trading, legal and brokerage fees will be involved as will a conservation covenant agreement, typically a “Section 106” legal agreement, that ties the land specifically to the habitat creation or restoration planned under the agreement, even if land ownership changes.

Defra have recently published their prices for statutory biodiversity credits – these represent a “last option” for developers if they are unable to achieve net gain on their site or by using offsite provision, such as with landowners or farmers. They therefore have an uncompetitive price point to ensure they do not compete with development of a private biodiversity offsetting market. Grassland types are listed at £42,000 per credit, with higher value grassland habitats (such as calcareous grassland) being slightly more expensive at £48,000. Other habitats are similarly priced, such as medium distinctiveness woodland at £48,000 or reedbeds at £42,000, but other habitats incur a greater creation cost, for example wet woodland at £66,000 and priority habitat ponds at £125,000.

³⁰ Natural England (2023) – The Biodiversity Metric 4.0 – Technical Annex 2 – Technical Information. Natural England, York.



3.1.1 Considerations

The upfront costs of baseline surveys and legal fees will be a disincentive for farmers to take up BNG. Ensuring an adequate price is agreed per Biodiversity Unit is important, to cover the long-term management activities required. Farmers may opt to sign up for schemes that cover the BNG process in its entirety, and more organisations are developing such schemes: the Environment Bank³¹ for example seeks to establish habitat banks in every local authority in England, and offers farmers and landowners options to cover all management and operational costs on the land (thus taking on liability for credit generation) by offering an upfront price and regular payment to farmers. However, they also are prioritising engaging in schemes only with farms exceeding 20 hectares in size, thus representing a limitation.

Whilst the devolved nations are still developing their approach to biodiversity gains and offsetting, particular consideration should be given to crofts in Scotland where most are less than five hectares in size and sit within common grazing and shared ownership initiatives unique to crofting. Ensuring that an approach to biodiversity net gain in Scotland that supports crofts and other small farms to engage with nature-positive farming practices is a key opportunity.

Solutions for small farms in England for BNG may be to operate within farmer clusters and other collaborations, whereby strength in numbers can enable presentation of a compelling or legitimate BNG offer and give smaller farms more diversification options.

The opportunity for restoring grassland for nature under a biodiversity credit delivery system is substantial, but management activities and prescriptions must consider farm activities and ensure that the habitats promised are realistic within an operational farm, or are based on land that is taken out of production. For example, selling credits based on restoring grassland to good quality is dependent on that grassland meeting particular condition criteria, that may be at odds with its management as livestock pasture. For example, if aspects of livestock management resulted in a failure of criteria relating to percentage cover of bare or poached ground, or percentage cover of thistles, dock and other “weeds” this would risk a successful credit transfer.

Some ecosystem services, and payments for them, can be sold separately (called “stacking”) or sold as a wider comprehensive approach (called “bundling”) to a single buyer. Understanding which services can and cannot be stacked is important – especially before entering into long-term agreements associated with BNG. Stacking is available where payments can clearly be evidenced to relate to different activities – i.e., are proved to be “additional” to each other. To reduce knowledge barriers and assist farmers in understanding their eligibility for future and current schemes, Natural England have released “stacking” and “bundling” guidance to provide clarity on the different options available for BNG, and to reduce the potential for double counting or perverse incentives such as reducing the value of existing habitats.

However, this underscores a crucial issue: the scheme offers limited rewards for farmers already managing their habitats for nature. Given the minimal scope for enhancing the ecological condition of already well-managed grasslands, these farmers will find limited benefits from the BNG scheme. This is a significant drawback.

A BNG-related case study follows, and illustrates that certain parts of England already have successful voluntary BNG markets ahead of its mandatory introduction. The case study’s categorisation per the decision-making context in Figure 1-2 is most closely related to ‘Mix with diversified income’, and includes a relatively small 10-hectare (25 acre) farm being used in BNG markets.

³¹ <https://environmentbank.com>



Case Study

Farmers Bella and Toby have realised the importance of farm diversification on their family farm and recently acquired former arable field, which they have enrolled in Biodiversity Net Gain.

Farm Name	Millbarton Farm (80 acres) and Puddington Moor (25 acres) Witheridge, Devon.
Farm tenure	Millbarton Farm owned since 2018, Puddington Moor site acquired in 2021.
Enterprise type	Suckler herd of pedigree Devon Ruby Red cattle, primarily for conservation grazing with beef boxes sold direct to customers and restaurants too.
Grassland types	Semi-improved grassland and former arable land with some woodland and riparian areas.
Favourite plant/management outcome/place on farm	“Seeing what is possible with what is actually less work, but more thought, and some sympathetic, reactive management decisions, in so little time, is what motivates us. And every year the abundance of what is here increases and keeps driving us on.”

Photo 3: © Bella Lowes



Mill Barton Farm is a 105-acre family run farm spread across two sites in mid-Devon and managed by husband and wife team Bella and Toby. Puddington Moor, is a 25-acre former arable field the pair have recently acquired and enrolled in Biodiversity Net Gain.

Mill Barton is a former indoor turkey farm and dairy unit and the grassland had been historically improved across the entire acreage, with at least three cuts of silage per year, high synthetic inputs, FYM, and digestate. Since coming under Bella and Toby's management it has subsequently been classed as predominantly semi-improved with some species rich areas, which are now on the increase.

When the pair acquired Puddington Moor it was in arable rotation, but is now managed as grassland as part of a 30-year BNG agreement with the Environment Bank, with the goal being to convert it to species-rich Culm grassland. Five acres of the 25 have been planted with scrub species and the boundary hedges encouraged to expand out into the field.

Bella and Toby tailor their grazing strategy for each area of land in question but would most comfortably describe their system as holistic planned grazing. In winter the cattle are moved less regularly and have access to larger areas - during the growing season the herd are moved through much tighter cells much more quickly, with the horses either in front or behind of the herd. They also run a small number of pigs and horses through the land to cross graze and disrupt the seed bank, but which are not otherwise part of the business.

Beef from their conservation grazed suckler herd of Devon Ruby Red cattle is sold for a premium, and it has no inputs other than a mineral bolus and salt lick. Due to their grazing, they have reduced housing costs by keeping increasing numbers of cattle out overwinter with their ultimate goal being zero housing. The sale of meadow hay and wildflower seed such as yellow rattle also contributes to the farm's viability.

At Puddington Moor surveys have been carried out by an independent third party (soil, breeding bird, and invertebrate surveys, and botanical surveys) which show improvements even after the first year. Meadow restoration and water intervention schemes have been implemented with the assistance of the Devon Wildlife Trust on Millbarton, who have also paid for the farm to take part in a flood mitigation project in the River Taw catchment.

The farm receives Basic Payment Scheme on both sites, though Mill Barton is enrolled in a Mid Tier agreement with Countryside Stewardship while Puddington Moor has a Biodiversity Net Gain agreement, which provides approximately £900/Ha of funding. Prior to BNG, Plantlife paid for Bella and Toby to spread green hay over 20 of the 25 acres.

Photo 4: © Bella Lowes



3.2 Nutrient Neutrality and private water schemes

Nutrient Neutrality (NN) mandates developers to ensure no increase in nutrient pollution affecting European protected sites, either by processing their pollution or using offsetting projects, akin to biodiversity net gain. Because of this, offsetting projects for NN have the capacity to fund grassland restoration and management.

The aim behind NN is to reduce further pollution of water courses: in particular the loading of water habitats such as rivers and streams with nitrogen and phosphorous leads to excessive algal growth, eutrophication and pollution of watercourses and damages highly valuable habitats such as saltmarshes and mudflats.

As NN stems from the requirement to protect catchments around sites protected under the Habitats Regulations 2017, it applies across Britain, however each nation has taken a different approach. At the moment in England, NN applies only to particular geographic locations rated as highest risk, with priority catchment areas identified in the Lake District, Teesmouth, Norfolk, Somerset and Kent.

In Scotland, NN is not being used as a concept at this time. There are actions being taken by the Scottish government in relation to protecting the water environment, but in relation to opportunities for farmers to receive income and support for managing or creating species-rich grassland these are of limited relevance and not discussed further.

The Welsh government responded to NN with a summit that focussed on phosphorous pollution in rivers, and covers the following SAC catchments: River Wye, River Usk, Cleddau Rivers, River Teifi and River Dee and Bala Lake catchment.

While still in development and not yet applied across all of England or Wales, NN allows farmers to partake in long-term habitat restoration or earn from short-term actions. Arable farmers have the option to join NN initiatives even with small landholdings, gaining credits from temporary cover crops on limited fields, leading to significant nutrient mitigation. Depending on its capacity to store and process nutrients, schemes involving grassland restoration may also operate at a small scale.

In England, NN is anticipated to receive funding and support from the Department for Levelling Up, Housing and Communities, yet despite a recent high court ruling that NN applies to planning condition discharges, at the time of writing (September 2023) governments are believed to be considering the future of this scheme.

On a related note, several water companies now offer a source of private income for farmers, also with the key aim of reducing watercourse pollution from agricultural activities. Many of these schemes encourage regenerative agricultural practices, for example floodplain meadow restoration, that seek to improve the condition of farmers' semi-natural and natural habitats, allowing them to better provide ecosystem services such as flood water interception and provision of water quality. Again, schemes do not exist for all areas but tend to be centred around specific catchments, such as the Wyre Catchment Natural Flood Management project. Partnership schemes are also developing, centred around fair pricing mechanisms and price-matching services connecting farmers with buyers.

3.2.1 Considerations

Landowners and farmers can engage with NN offsetting schemes, and several offsetting providers as well as matching services have been set up by environmental NGOs and Natural England. Offsetting schemes can be short-term provision, such as growing cover crops to reduce nitrogen pollution, or long-term solutions which are more oriented around land conversion, such as conversion of arable land to reedbeds, wetlands or wet pasture habitats. Whilst farmers have options to convert improved grassland, or restore floodplain meadows, from the perspective of a livestock grazing farmer, there are limited options for grassland restoration and creation, with a potential incentive to convert grasslands into



wetland habitats if these are deemed more valuable than improved or dry grasslands in order to access payments associated with NN. However, Natural England's summary guidance on NN and Nutrient Mitigation lists the creation or restoration of new semi-natural habitats as a key mitigation measure, stating "*grasslands can offer a strong outcome for nutrients when designed and sited appropriately*"³².

As with other natural capital schemes in development, the market for nutrient mitigation is at a very early stage and suffers from a large degree of uncertainty. This can be reduced with targeted government intervention and regulation stemming from policy drivers. For example, the integrity of markets can be improved with the development of standardised metrics and national registries – to ensure fair measurement and no double counting. For nutrient schemes, the development of standardised assessment and monitoring is typically occurring on a regional or catchment-based level, rather than a national level, which may add to the confusion. Capacity and knowledge-sharing for the array of metrics in existence across all alternative income schemes is vital for farmers to make best use of them.

In addition, tenancy lengths may also significantly play into decision making in this area, as some schemes are designed with long-term nature recovery in mind with certain habitat conversion actions requiring 125-year agreements. Tenant farmers are likely to need to obtain consent for any change of use or practices on their farm, and for some legal agreements, e.g. section 106 agreements, landowners will need to be involved in contracts that bind the land to long-standing management practices. Government policy has yet to clarify the roles and responsibilities of tenants and landowners within these emerging markets.

Like BNG, existing nutrient mitigation schemes might not reward farmers already practising nature-positive methods and promoting species-rich grasslands. This could deter farmers from committing to long-term nature restoration. Policies should focus on preserving natural capital, not just restoring it.

3.3 Certifications and added-value

By enrolling in certification schemes, farmers can charge a premium for food that has been produced to specific standards, resulting in increased financial returns. Numerous certification schemes have been developed to offer premiums for nature-positive farming.

An increasingly environmentally-aware UK public may be willing to purchase accredited goods that align with their values, but several other socio-economic factors such as the cost-of-living crisis may also play into decision making. A 2016 study³³ found consumers paid on average 89% more for organic versus non-organic food, but a 2015 study found that over half of consumers who bought organic produce believed it cost too much to regularly buy. YouGov 2021 data³⁴ shows that 57% of consumers are willing to pay more for food that was "environmentally friendly", with a higher proportion of younger generations agreeing than older.

Examples of available certifications include:

- **Pasture for Life:** a Community Interest Company founded in 2011 whose certification is grass-based requiring grazing, as well as adhering to other standards of high animal welfare and promotion of farming wildlife-friendly fields. Pasture for Life also advertise outlets that sell pasture-fed meat and pasture-fed dairy products to connect interested consumers with sellers. Farmers with Pasture for Life are

³² Natural England, 2023: NE776 Edition 2 Nutrient Neutrality and Nutrient Mitigation V1.3, Natural England: York.

³³ <https://www.foodnavigator.com/Article/2016/01/28/UK-shoppers-pay-89-more-for-organic-food-survey#>

³⁴ <https://yougov.co.uk/topics/consumer/articles-reports/2021/04/29/global-willingness-pay-for-sustainability>



encouraged to sow legumes and reduce their input of chemical-based fertilisers, which is a beneficial management action for species-rich grasslands.

- **LEAF Marque:** Linking Environment And Farming (LEAF) Marque is a program that operates globally to certify businesses against standards that cover a huge range of farm operations from planning, soil management, crop health, animal husbandry and waste management to landscape and nature conservation. There are 22 standards that cover Landscape and Nature Conservation, some of which relate to protection and management of grasslands, such as through employing a grazing regime that avoids damage to soils and grassland, and other targets which relate to reduction of fertiliser application.
- **Red Tractor Quality:** a suite of several certified standards that have been employed since 2000, resulting in Red Tractor becoming the UK's biggest farm food assurance scheme. Standards primarily relate to animal welfare and food safety and traceability, with limited relevance for the support of species-rich grassland habitats.
- **A Greener World:** an international suite including: Animal Welfare Approved, covering most farmed livestock species, ruminant and monogastric, requiring pasture access and defined high welfare standards from birth to slaughter; Certified Grassfed, an addition to Animal Welfare Approved, but prohibiting grains and manufactured feeds; and, Certified Regenerative, a whole farm approach, considering soil health, water use and conservation, climate, biodiversity, livestock integration, crop management and socio-economic impacts.
- **Fair to Nature:** a standard developed by RSPB in the UK that focuses on biodiversity within farms. Fair to Nature initially was for arable farmers only but has now been extended to all farm types and covers conventional and organic systems. The standard requires farmers to actively manage a range of wildlife habitats that cover at least 10% of their farmed land, and manage the rest of their farm including soils, crops and livestock in nature-positive ways.

3.3.1 Considerations

Farmers might resist adopting certification schemes due to doubts about the longevity of the benefits from increased value. It's crucial to grasp the factors that determine consumer willingness to pay more for nature-positive products. For instance, farmers selling directly might find customers ready to pay premiums, but those in supermarket chains could miss out if they impulsively join schemes without market understanding.

As major companies push for net zero and are pressured to understand and mitigate their environmental impact, supplier choices will likely factor in nature-positive farming. Although certification can mean premiums from eco-conscious consumers, it doesn't necessarily ensure stability for all farms. Many farmers also believe there's an imbalanced responsibility, which could be distributed along supply chains. "Insetting" in supply chains for nature-positive farming could level the playing field for farmers. Yet, there's the potential danger of suppliers favouring only those with green accolades, like net-zero pledges. This could sideline smaller farms due to proportionally higher costs, or those already in schemes which hinder them from exploiting green practices, such as selling all their carbon credits.

3.4 Carbon markets

The move towards net-zero across the UK will, alongside drastic reductions in carbon emissions, also require carbon removal and storage to balance ongoing emissions. Farmers have the opportunity to engage with carbon schemes with several carbon schemes in existence, such as the Woodland Carbon Code and the Peatland Carbon Code, as well as codes in development such as the Soil Carbon Code. However, there is currently no relevant



Grassland Carbon Code. A full overview of existing and developing carbon markets, their relevance to farmers, and particularly to farming grasslands for nature, is provided in Appendix One to this report.

Appendix One covers information about voluntary carbon markets, including: challenges of market participation; challenges of ensuring nature-positive outcomes alongside carbon sequestration; soil carbon code collaboration options for British farmers; the development of market standards for all environmental markets; and further discussion of 'stacking' multiple income streams.

3.5 Renewable energy

Renewable electricity generation options include solar farms, wind farms or harnessing biomass technology. Care must be taken when looking to establish solar farms on grassland, as evidence suggests solar farms can impact the diversity and species composition of existing species-rich grassland³⁵. Therefore, solar farms should not be built on protected sites, or areas functionally linked to protected sites, or ecologically important grasslands - such as priority habitat grasslands. Biodiversity enhancements for grasslands can be achieved where solar farms are established on improved grasslands, which are low in diversity.

Farmers' land suitability for renewables hinges on physical geography characteristics and its ability to deliver specific ecosystem services. Solar schemes on improved grassland, if managed appropriately through a Biodiversity Management Plan, have capacity to feed into the creation of species-rich grasslands. Many solar farms are grazed at a low level by sheep or free-roaming poultry for example, and the BRE's Agricultural Good Practice Guidance for Solar Farms sets out standards and best practice for managing livestock on solar farms on agricultural land.

Sheep or poultry are not the ideal livestock for managing species-rich grassland due to their grazing habits. However, in the context of field solar arrays, they are deemed most suitable. Moreover, cutting hay from solar array fields can enhance the management of existing improved grasslands for biodiversity.

3.5.1 Considerations

Farmers may benefit from use of the renewable energy generated on their land, and obtain an income from selling back to the grid or by leasing rights to third parties. Farmers should seek professional legal advice when selling land or entering into leasing agreements for renewable projects, to ensure their needs are represented in any agreements, which might require additional consideration for tenant farmers. Other legal considerations include the implications of changing land management practices on tax status of farms. Whether certain activities count as trading for VAT and other tax purposes, including whether land use changes still meet the definition of "agricultural" for inheritance tax relief purposes, are considerations for which farmers need long-term clarity.

The size of farms is also key factor as smaller farms are less likely to be eligible or attractive to renewable energy offerings, as is tenancy considerations. Whilst solar farms present opportunities for species-rich grassland creation, they also present a risk that existing species-rich grassland may be lost to development.

³⁵ Armstrong, A., Ostle, N.J. and Whitaker, J. (2016). Solar park microclimate and vegetation management effects on grassland carbon cycling. *Environmental Research Letters*, 11(7), p.074016. doi:<https://doi.org/10.1088/1748-9326/11/7/074016>.



3.6 Agroforestry

Agroforestry is the integrated use of trees on a farm for a range of potential benefits. The definitions and inclusions within Agroforestry can vary, but in general trees in farm environments can take several forms, including shelterbelts, groups of trees, tree lines between crop lines and grazing within woodlands. Whilst many studies show the benefit of agroforestry for the environment, such as flood risk reduction, soil erosion reduction and improving biodiversity on farms³⁶, the benefits to the productivity of farms has also been highlighted – agroforestry schemes have been shown to reduce feed costs and crop / animal pest incidences, and also to increase productivity especially where fruit or nut trees are used. For example, use of orchards for seasonal grazing by livestock was once more common across the UK as part of a mixed farm system.

3.6.1 Considerations

Though agroforestry is practised across nearly 550,000 hectares in the UK, research, such as a 2018 study by ClimateXChange, highlights an information gap about its scope and progression. The Soil Association has identified major obstacles to its wider adoption in England and Scotland, including the need for better knowledge and hands-on guidance, a call for its more frequent discussion by farm consultants (indicating regime resistance), and a notable finding that agroforestry likely sits in a policy void between forestry, environmental stewardship, and agriculture. For instance, tree density in agroforestry often isn't sufficient to qualify for woodland creation grants and might also be ineligible for various environmental stewardship schemes.

The subsequent uncertainty in government regulation and policy regarding agroforestry may represent a barrier to farmer uptake (i.e. vision barriers), and agroforestry proponents are calling on the UK and devolved nations to ensure agroforestry forms a central part of upcoming and developing farming policies, to provide greater clarity on scheme eligibility and to encourage uptake of agroforestry across more farms across the UK.

Agroforestry schemes tend to have high longevity, spanning decades. This might deter farmers, fearing reduced adaptability to future diversification opportunities. Hence, policies should clearly detail agroforestry's long-term impacts on habitats like grasslands. Additionally, clarity is needed on how agroforestry interacts with other potential income streams such as NN or BNG.

Socioeconomic factors also need consideration in land-use policy and governance for all alternative income stream options, including agroforestry. For example, many Scottish communities have felt adversely impacted by rapid expansions of tree planting, driven by policy and natural capital market growth in woodland carbon and tree-planting schemes.

Whilst agroforestry represents one option for farmers to diversify, there may be a risk that adopting agroforestry has unintended impacts on the retention and management of grasslands – for example, grassland species composition may alter or areas planted for agroforestry may eventually transition to woodland habitats should payment incentives promote this trajectory, thus leading to the loss of grassland habitats.

3.7 Leisure and tourism

Leisure and tourism income streams for farmers can include sports such as fishing and shooting, enjoyment of hobbies such as walking and wildlife watching, as well as camping and accommodation options.

³⁶ Soil Association and Woodland Trust (2018) Agroforestry in England: Benefits, Barriers and opportunities. Available at: https://www.soilassociation.org/media/15756/agroforestry-in-england_soilassociation_june18.pdf



Farm diversification in this regard has been cited as an effective means of securing income for farmers for several decades, in contrast to some of the new or developing opportunities described above. In relation to the management of species-rich grasslands, the growth in ecotourism or nature-based tourism, where there is an expectation that visited areas are rural in nature with high species and habitat diversity³⁷, would promote nature-positive farming practices. However other activities, such as camping or agritourism (where farmers provide on-farm activities connected to farming such as milking or harvesting) may be of less relevance to securing grassland management for nature benefit.

3.7.1 Considerations

Studies³⁸ on the impact of growing ecotourism in farm landscapes reveal that attitudinal barriers exist which relate to the socio-cultural context of farming, and the distinction between operational farms and public perception of farming, as well as factors such as seasonality of tourism and subsequent employment implications. Farmers must also consider the tax implications of widespread diversification into leisure and tourism across whole farms: converting farm buildings into holiday-lets, for example, normally eliminates certain tax reliefs for farmers. Tenancy is another key consideration in registering for alternative income schemes oriented around leisure and tourism. As with above schemes, tenant farmers are likely to need consent for change of use with landowner involvement.

³⁷ Bovolenta, S. and Parente G. (2012), The role of grassland in rural tourism and recreation in Europe. Polish Grassland Society EGF 2012, vol. 17 ppg 773 – 747. Available at: https://www.researchgate.net/publication/302964131_The_role_of_grassland_in_rural_tourism_and_recreation_in_Europe

³⁸ Sharpley, R., and Vass, A. (2006). Tourism, farming and diversification: An attitudinal study. *Tourism Management* V27 Issue 5 ppg 1040-1052. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0261517705001706#:~:text=Although%20farm-based%20tourism%20has%20a%20long%20tradition%2C%20particularly,in%20general%20and%20the%20agricultural%20sector%20in%20particular>



4.0 Enabling a nature-positive transition

The barriers to a nature-positive transition in Britain, as introduced in Section 2.2, are multifaceted but surmountable through coordinated efforts from policymakers, the private sector and farming communities. Chapter Four delves further into the intricate costs and risks deterring farmers from adopting sustainable practices, based on assessments of current incomes (Chapter Two) and diversification options (Chapter Three). It emphasises the need for collaboration to ease constraints, particularly for smaller farms. This chapter situates British farmers as complex agents, bound by legacy yet open to fresh thinking.

Four research papers released this year from Green Finance Institute (2023), Food, Farming & Countryside Commission (2023; 'Natural Capital Markets'), The Wildlife Trusts (2023; 'Farming at the Sweet Spot') and The Grantham Research Institute on Climate Change and the Environment (2023; 'Sowing Seeds') all reach similar conclusions around the barriers in Britain. These papers provide the foundation for this chapter.

In economics, the concept of 'incentives' is foundational. It dictates that individuals and businesses respond to rewards, risks, and potential revenues. For British agriculture, this becomes particularly pertinent when discussing the costs associated with nature-positive farming. In Chapters Two and Three we have seen that incentives for individual farmers only partly point towards nature-positive actions.

A farmer is, at their core, an entrepreneur. When risks outweigh rewards, or when the potential net revenue appears too slim, they're less likely to adopt new, nature-positive methods. Therefore, the absence of financial incentives, paired with farmers' precarious positions in the value chain, makes it challenging to encourage entrepreneurial leaps into more sustainable farming techniques.

There is a particular emphasis in this chapter on collaboration (either 'Active collaborators' or 'Potential collaborators' per our decision-making Figure 1-2 typology) because better guidance is needed for individual farmers (and particularly those associated with the 100,000 plus farms in Britain that are under 20 hectares) who believe in nature-positive farming but understandably cannot clearly see a pathway to achieve this.

4.1 Finance and action barriers

Several studies have demonstrated a "financing gap" between current public sector commitments and investment needed for protection of biodiversity and ecosystem services: in 2021, the Green Finance Institute and Efec estimated that £3.7 billion was needed for sustainable soil management, with an additional gap of £19.4 billion for protecting and restoring biodiversity, in order to reach the UK's 2030 environmental targets and goals³⁹.

A report by Matt Rayment conducted in June 2023 on behalf of the RSPB, the National Trust, and The Wildlife Trusts delves deeply into the financial resources required for efficient environmental land management in the UK. Several key aspects of this report highlight the various barriers and challenges that need to be addressed for effective land management. Rayment's 'Scale of Need' model, which accounts for changes in output prices, input costs like labour, machinery, and crop prices, showed that in order to meet environmental land management priorities such as net zero and priority habitats, annual farming costs in Britain will exceed £4 billion (£2.4b in England; £1.2b in Scotland; and £500m in Wales). These cost estimates include some £500 million related to grasslands, and are additional to rural development support. The practical connections between Rayment's analysis at the farm level and its connection to our analysis of Farm Business Income (Chapter Two) is complicated, but Rayment's report sets out assumptions (for example, farmers managing

³⁹ <https://www.greenfinanceinstitute.co.uk/news-and-insights/finance-gap-for-uk-nature-report/>



435,000 hectares of improved grassland will need to implement 'nature friendly farming practices'⁴⁰).

Farmers have traditionally accessed private finance, with Defra data showing £20 billion in liabilities on UK farm balance sheets. Major high street banks have historically facilitated these needs, but new entities like Oxbury Bank⁴¹ are emerging to serve the evolving needs of British farmers. As the landscape shifts, more financial products tailored to support environmental improvements are being developed.

The GFI's Financing research was introduced in Chapter Two (three barriers around data, confidence and implementation). The authors provide recommendations for 'aggregation models' bringing multiple land managers together, such as through farmer cooperatives. The median farm size in Britain is only 20 hectares, and so collaboration models are going to be essential for the transition. A summary of potential aggregation models is taken from the GFI report and shown in Table 4-1.

Table 4-1: Summary of aggregation models, adapted from Green Finance Institute

Aggregation Model	Project Example(s)	Model Structure	Key Features	Diversified Income Stream (see Chapter 3)
Farmer Cooperative	Environmental Farmers Group (EFG)	Trading Cooperative	Includes both large and small farms, and tenant farmers	3.1 / 3.2 / 3.4
Farmer Cluster Groups	North East Cotswald	Community Interest Company	Private and public funding for soil and habitat enhancement / creation	3.1 / 3.2 / 3.4
Landscape Enterprise Networks	East of England LENS	Supply-side aggregation	Nature-based Solutions at landscape scale	3.2 / 3.4
River Catchment Led	Wyre / Poole Harbour	Community Interest Company	Flood risk / nitrogen level reduction	3.2
Farmer Led A	Wending Beck	Limited Liability Partnership	Collaboration including Anglian Water	3.1 / 3.2
Farmer Led B	Green Farm Collective	Limited Company	Trading through 'Trinity Natural Capital Markets' platform	3.1 / 3.3 / 3.4
Private Sector Led	Arla	Farmer Owned Cooperative	Profits shared between farmers	3.3

Successful stories, including the case studies in this report, are needed to encourage transition. For example the EFG, which was established in 2021 due to uncertainties around the future of Basic Payment Schemes, as of August 2023 has membership covering 230

⁴⁰ This roughly equates to 70% of the (just under) 7 million hectares of improved grassland in the UK, of which 10% of that area is assumed to be needed for nature-friendly practices. Rayment does not define what exactly is meant by 'nature friendly farming practices'.

⁴¹ <https://www.oxbury.com/>



farmers and 116,000 hectares of land in England⁴² (i.e. over 1% of England's farmed area). Many of the other examples shown in Table 4-1 are on a smaller scale than EFG, but nevertheless provide templates for collaborative success.

The Natural Capital Markets report underscores the challenges smaller farms face in accessing private natural capital markets. Such farms often find fixed participation costs prohibitive and lack the land's critical mass. This points to a need for initiatives tailored to smaller farms, such as collaborations and farmer clusters that can aggregate land to achieve economies of scale.

There are many diversification options for farmers (Chapter Three) but small and/or tenant farmers cannot easily access many of them. Gross income from diversification options represent less than 10% of total gross incomes, and this will need to increase for a nature-positive transition. Two fundamental aspects that need better clarification are the possibility of stacking incomes from different markets (see Section A1.4) and also combining with public payments such as LIG1 and LIG2 (Section 2.4.1).

The 'Farming at the Sweet Spot' report provides further evidence that reducing agricultural inputs and outputs to align with the natural resources available on the farm, without compromising profitability, can facilitate a transition to more nature-positive farming in Britain. It shows that most farm types studied, including livestock systems, could increase commercial returns by 10-45% by moving towards "Maximum Sustainable Output" (MSO) - relying only on naturally available on-farm resources (see also Section 2.1). This addresses financial barriers, as it improves farmer incomes while reducing costly external inputs like fertiliser. However, species-rich grassland often requires bespoke approaches to management, and many farmers may not have the ecological expertise to assess restoration, management, or creation opportunities to access different financial opportunities (knowledge barriers).

The 'Sowing Seeds' report (Ross *et al.* (2023)) was also introduced in Chapter Two and highlights several barriers relating to finance that are impeding the transition to nature-positive farming in Britain. The report points to difficulties accessing finance for farms, especially smaller entities, due to issues like lack of collateral (i.e. security for loan repayments). It notes the high debt levels in the sector and farmers' reluctance to take on more debt or accept loan covenants requiring specific sustainability activities. Uncertainty around returns from nature-positive practices and environmental markets, along with the squeeze from input costs and powerful buyers (i.e. the action barrier of farmers having a weak position in the value chain), hampers investment and limits farmers' choices.

4.2 Knowledge and vision barriers

The GFI Financing research highlights several key barriers relating to knowledge and vision. It notes that farmers lack awareness of finance opportunities and relevant management practices. There are also gaps in knowledge sharing among farmers on the business impact of transitioning practices. Regarding vision, the article points to a lack of clarity from government on desired environmental outcomes, causing uncertainty for farmers and the private sector (see also the discussion in Section 2.2). As discussed in Appendix One, the focus on carbon reductions rather than a broader range of public goods risks nature-negative outcomes.

The Natural Capital Markets report highlights several barriers relating to knowledge: current monitoring and measurement of on-farm natural capital is often ad-hoc and not standardised. Farmers require usable tools and baseline data to understand their starting

⁴² See <https://www.environmentalfarmersgroup.co.uk/large-scale-farmers-group-is-helping-developers-unlock-house-building> (accessed 25 August 2023).



point. Costs of measurement may disadvantage smaller farms, suggesting a role for public funding and sharing costs through collaboration. Regarding vision, the report argues the government's messaging on environmental priorities has been ambiguous and lacked clear targets. This uncertainty hinders farmers from confidently transitioning towards more sustainable models.

The government's rhetoric ('public money for public goods') has not been matched by its agri-environmental policy (see Section 2.4.1). However, the vision in England is arguably clearer than it is in either Scotland (2.4.2) or Wales (2.4.3). Other policy areas such as Biodiversity Net Gain (Section 3.1) are also better developed in England than the rest of Britain. A lack of clarity (and constant changes) to policy are a major barrier to the nature-positive transition and, over seven years after the vote, Britain's post-Brexit vision for agriculture remains unclear.

Membership in the PFLA network supports knowledge exchange and peer learning which is correlated with better environmental outcomes. This points to the value of practitioner networks in co-developing knowledge and practices tailored to local contexts. Overall, the PFLA model indicates pasture-based systems can be economically viable whilst improving environmental performance, but that farming within ecological boundaries is a learning process requiring support networks. Removing barriers to expansion requires insight into variable performance and opportunities to validate alternative models of viable nature-positive farming.

The 'Sowing Seeds' report finds lower awareness and capacity to engage with incentives and schemes among smaller farms. It notes problems with knowledge development, highlighting that relevant information is scattered, overly scientific and abstract. Commercial interests dominate advisory services, reinforcing the status quo, and risking perverse incentives being created that drive the loss of existing species-rich grasslands, as farmers are advised to pursue other land use options. An unclear vision from government and lack of ambition leaves farmers uncertain about the future requirements and knowledge needed. The report advocates policy coherence, ambitious targets, metrics and data to provide confidence and direction. It recommends engagement processes to build awareness, sharing examples like landscape enterprise networks and clusters that facilitate collaboration and knowledge exchange.

4.3 Regime resistance barrier

The wealth of recent literature relating to the 'finance' barrier (and, to an extent, the 'action', 'vision' and 'knowledge' barriers) for Britain demonstrates a pathway for nature-positive farming. We feel that the most formidable barrier, however, is 'regime resistance' and this is more abstract, pervasive and systemic issue.

Regime resistance is akin to fighting against a tide of historical and systemic expectations. The UK agriculture industry has long operated on a 'productivist' model, emphasising high yields and cheap food production. This isn't merely tradition but a deeply embedded economic paradigm. Shifting this involves more than new suggestions; it means confronting deeply rooted beliefs, which is where proper incentives play a crucial role.

The cultural and psychosocial costs to farmers are particularly poignant. Many British farmers come from lineages where specific farming skills and knowledge have been passed down through generations. Asking them to overhaul their practices is not a mere technical request; it treads upon centuries of accumulated wisdom and lived experiences. For these farmers, their methods aren't just a way of providing food; they are a testament to the legacy of their forebears, a tangible connection to their roots. Thus, the transition implies more than just adapting to new techniques—it potentially implies that the practices they've held dear, perhaps for generations, may have been misdirected.



Acknowledging the deep cultural and identity ties that farmers have with their traditional practices is a critical step in fostering genuine dialogue and collaboration. The goal is a future where sustainability and tradition can coexist and inform one another, forging a path forward that honours both environmental essentials and the rich legacies of our farming communities.

Critical Systems Heuristics (CSH) can dissect the underlying beliefs of systems like agriculture, especially in revealing concealed power dynamics. By shedding light on these hidden assumptions, from profitability views to productivity notions, CSH ensures system design considers a wide range of perspectives. In agriculture's intricate landscape, stakeholders range from large corporations to grassroots farmers, and CSH helps identify their varying interests. CSH facilitates a balanced view, prioritizing environmental, socio-cultural, and economic aspects. With its focus on values, CSH can help ensure that Britain's agricultural shift is not only efficient but ethically robust.

A recent study by Hutcheson *et al.* (2023) applied CSH to examine the transition in Scotland. A significant consensus among participants was the necessity for all actors in the food system to engage in the transition, emphasising a systemic lock-in where individual changes depend on coordinated efforts across the spectrum. For instance, consumer acceptance of potentially higher food costs is crucial if nature-positive principles are to be broadly adopted by farmers. Differing views emerged regarding the emphasis on yield, with some urging a departure from the "yield is king" mentality and others highlighting its importance for both profitability and carbon footprint considerations.

Our report has covered various aspects of regime resistance, from public payments and public goods (Sections 2.1 and 2.4) to the mixed evidence about price premiums for nature-positive business models (Section 3.3) to the need for market standards for nature (A1.3 of Appendix One). The case studies across this report, as well as those introduced in Section 4.1 above provide examples of figurehead farmers. Regime resistance contributes to each of the other barriers in systemic ways, and solutions to each of the ten factors (i.e. R1 to R10) will also facilitate better outcomes for finance, action, knowledge and vision barriers.

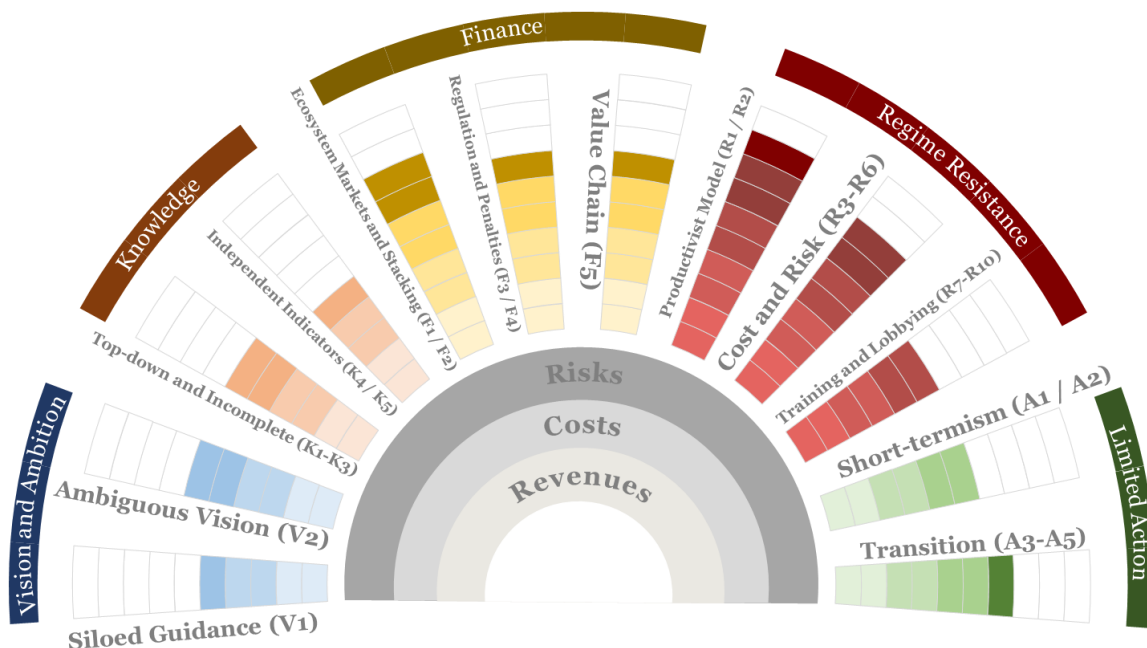
4.4 Discussion

This report highlights the intricate challenges hampering the shift to nature-positive farming. As shown in Figure 4-1, barriers first introduced in

Figure 2-2 in Chapter Two are broken down further and assessed on a scale of zero (not a barrier) to ten (very significant barrier).



Figure 4-1: The significance of different barriers to a nature-positive farming transition, ranked from zero (lowest) to ten (highest)



Addressing financial incentives is crucial for farmers to adopt regenerative practices. While carbon markets offer potential, they're currently unclear (Appendix One). Clear government policies, transparent regulations, and private sector platforms can help farmers. The transition needs a mix of public subsidies and private finance:

- Ecosystem Markets and Stacking⁴³ (F1/F2): 8/10 - Emerging markets have uncertainties, which is especially challenging for small farmers. The Government aims to enable stacking but this is a complex situation. Perverse incentives for certain markets mean that previous nature-positive actions limit future income opportunities.
- Regulation and Penalties (F3/F4): 7/10 – There are limited penalties for environmental damage and limited subsidies for public goods, though schemes like nutrient neutrality (Section 3.2) show promise if expanded.
- Value Chain (F5): 7/10 – Farmers have a weak position in the value chain, with buyers dictating prices. Supplier requirements around sustainability may improve the situation.

Action constraints stemming from financial limitations, insecure tenancies, and a dependence on subsidies need unravelling. Policy vision must shift from production maximisation towards resilience and sustainability. Support is required for farmers to break path-dependence, take risks, and invest in new methods. Partnerships between government, private sector and NGOs can provide bundled solutions easing farmers' capital constraints:

- Short-termism (A1/A2): 6/10 - Tenancy lengths limit long-term planning. But schemes increasingly offer 5-10 year contracts and landowner-tenant profit-sharing models can help to align interests.

⁴³ See Appendix One (part A1.4) for a discussion of stacking for carbon markets.



- Transition (A3-A5): 7/10 - Switching production systems requires high upfront investment. Budgets are tight, and banks consider nature-positive farming risky. Public-private financing partnerships can ease transition costs.

The absence of a unifying vision has led to inconsistent, confusing policy signals. Coherent governmental frameworks outlining a shared vision for sustainability are essential, adapted to regional nuances. Communication campaigns and agricultural extension services should clearly articulate this vision. Farmers need long-term certainty to implement transformative changes:

- Siloed Guidance (V1): 5/10 - The UK government's agriculture and environment policies are not fully aligned or integrated across departments.
- Ambiguous Vision (V2): 6/10 - The vision for nature-positive farming lacks clarity and ambition. But growing awareness of the crisis provides momentum.

Equipping farmers with ecological knowledge and skills will be important. Agricultural curricula and training programs should incorporate regenerative techniques and independent farm advisory bodies can provide trusted support:

- Top-down and Incomplete Knowledge (K1-K3): 6/10 - Knowledge development tends to be top-down with insufficient farmer involvement. Information is scattered across sources. But farmer networks increasingly share practical knowledge.
- Independent Indicators (K4/K5): 5/10 - Metrics and monitoring lack standardisation but government is working to address this. A dependence on commercial knowledge persists.

Last but not least is regime resistance. Continued dialogue, emphasising shared values like stewardship and community resilience, can overcome polarisation. Ultimately, nature-positive outcomes require farmers' active participation and leadership:

- Productivist Model (R1/R2): 9/10 - The productivist model is deeply culturally ingrained after decades of policy focus on yields. It will require substantial efforts to transition mindsets and structures. Policy measures, ethical consumerism and models such as PFLA provide momentum.
- Cost and Risk (R3-R6): 8/10 - Farmers face high costs/debt in order to transition, with limited options for tenant farmers. Banks are slowly accommodating better sustainability in their customers and insurance products are emerging. Private finance and collaboration will be essential.
- Training and Lobbying (R7-R10): 6/10 - Education remains quite conventional. However, curriculum updates and new farmer networks foster sustainability. These counterbalances to established lobbies must be amplified.

In summary, the most serious barriers appear to be around the dominant productivist model, high transition costs and uncertainty over emerging nature markets.



5.0 Conclusion

The 1947 Agriculture Act was passed in a Britain still reeling from the ravages of war. With widespread rationing of staples like potatoes, bread, meat and cheese, the understandable focus was on maximising food production at any cost. However, while entirely justified at the time, this production-oriented mindset persisted long after rationing ended in the 1950s. Today, it drives practices that imperil nature, evidenced by the precipitous decline of species-rich grasslands across the UK. With the climate and nature crises looming, there is an urgent need to transition towards more sustainable models of agriculture.

This report has delved into the challenging economics of farming in modern Britain. As Chapter Two outlined, net farm incomes remain low, particularly for livestock grazing enterprises managing permanent grasslands. However, multiple systemic barriers deter farmers from adopting nature-positive practices, even where these may boost long-term profitability. From a lack of incentives and investment gaps, to limited vision and knowledge obstacles, the transition requires a multifaceted approach. Schemes like the Sustainable Farming Incentive in England have laudable ambitions but practical complexities in implementation. Payment rates often inadequately reward farmers for delivering vital public goods through nature-positive grassland management. Progress has been made, but there is a need for more comprehensive, streamlined and ambitious policies across the UK's devolved administrations.

Farmers need help diversifying into new revenue sources that specifically underpin nature-positive practices, as Chapter Three (including Appendix One) highlighted. Environmental markets around ecosystem services show promise but generally are nascent, ambiguous and fragmented. Carbon markets pose risks like locking farmers into decades-long land use changes. Careful standards, tailored finance products and innovative collaboration models are essential to ensure diversification supports rather than undermines sustainable farming livelihoods.

The challenges in Scotland, Wales and England are not identical, but the systemic barriers explored in Chapter Four apply across Britain. While undoubtedly daunting, the transition is possible with coordinated efforts from policymakers, the private sector and farming communities. British agriculture remains at a crossroads, facing the monumental task of sustainably nourishing the nation while healing our damaged ecosystems.



6.0 Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AES	Agri-Environment Scheme
BNG	Biodiversity Net Gain
CAP	Common Agricultural Policy
CS	Countryside Stewardship
CS Plus	Countryside Stewardship Plus
CSH	Critical Systems Heuristics
Defra	Department for Environment, Food and Rural Affairs
EFG	Environmental Farmers Group
ELMS	Environmental Land Management Scheme
EU	European Union
FBI	Farm Business Income
GFI	Green Finance Institute
ha	hectare(s)
ICROA	International Carbon Reduction and Offset Alliance
IC-VCM	Integrity Council for Voluntary Carbon Markets
IPM	Integrated Pest Management
LENS	Landscape Enterprise Networks
LFA	Less Favourable Area
LIG	Low Input Grassland
LR	Landscape Recovery
MSO	Maximum Sustainable Output
NEIRF	Natural Environment Investment Readiness Fund
NFU	National Farmers Union
NGO	Non-Governmental Organisation
NN	Nutrient Neutrality
ONS	Office for National Statistics



Acronym/Abbreviation	Definition
PC	Peatland Carbon Code
PFLA	Pasture Fed Livestock Association
PIUs	Pending Issuance Units
SBTN	Science Based Targets Network
SFI	Sustainable Farming Initiative
SFS	Sustainable Farming Scheme
TB	Tuberculosis
TIFF	Total Income From Farming
TNFD	Taskforce on Nature-related Financial Disclosures
tCO ₂ e	metric tonnes of carbon dioxide equivalent
WCC	Woodland Carbon Code



7.0 Glossary

Term	Definition
Additionality	The requirement in carbon markets that emission reductions or carbon sequestration must be additional to what would have occurred without the financial incentives provided by selling credits.
Agri-environment schemes	Payments to farmers in return for environmental management actions that provide public goods like biodiversity, clean water and carbon storage.
Biodiversity credits	Units generated through habitat creation or enhancement activities, which developers can purchase to meet Biodiversity Net Gain requirements if they have a shortfall on-site. Source: Department for Environment, Food & Rural Affairs (UK)
Biodiversity Net Gain (BNG)	A requirement under the Environment Act 2021 for all developments in England from November 2023 to deliver at least a 10% increase in biodiversity value compared to the pre-development baseline. This is measured using the Biodiversity Metric tool. Source: Department for Environment, Food & Rural Affairs (UK)
Biodiversity Units	The metric used in the Biodiversity Metric tool to quantify biodiversity value before and after development. It combines extent, distinctiveness and condition scores for habitats. Source: Department for Environment, Food & Rural Affairs (UK)
Biodiversity Uplift	Within a Biodiversity Net Gain context, uplift is achieved when habitats have been created or restored that have a higher measured “value” than what existed previously, thus meaning the site in question has had an uplift in biodiversity value. Typically measured using a Biodiversity Metric.
Direct payments	Subsidies paid to farmers based on the area of land farmed, under the EU CAP and previously by UK governments. Now being phased out.
Environmental Land Management scheme (ELMS)	A new agricultural policy in England that will pay farmers public money for delivering public goods like clean air, clean water, flood mitigation, access to countryside, and habitat restoration.
Farm Business Income (FBI)	The return on all unpaid labour and capital invested in a farm business, including land and buildings. It is calculated as total farm revenue minus explicit costs. Source: Department for Environment, Food & Rural Affairs (UK).
Habitat banking	An offsetting approach where biodiversity units are banked by habitat creators for later use by developers who need to offset impacts.
Hay meadow	A type of neutral grassland; grasslands that are left to grow over the spring and summer and are cut for hay.
Improved grassland	Intensively managed grassland dominated by a few productive grass species and often fertilized. Low in biodiversity compared to semi-natural grassland.



Term	Definition
Additionality	The requirement in carbon markets that emission reductions or carbon sequestration must be additional to what would have occurred without the financial incentives provided by selling credits.
Landscape Enterprise Networks (LENs)	Local partnerships between farmers, land managers, businesses and communities that work collaboratively on a landscape scale to deliver environmental and social goals. Source: Department for Environment, Food & Rural Affairs (UK)
Less Favoured Area (LFA)	Agricultural land where production conditions are difficult, often due to poor climate or soil conditions. LFAs receive higher levels of subsidy.
Leys	Temporary grass or legumes sown in rotation, with grain or other crops, usually as a soil conservation measure.
Maximum Sustainable Output (MSO)	The level of production that relies solely on naturally available resources at the farm, with no additional inputs. Aligns production with ecology.
Natural Capital	Natural Capital describes the value of the natural world to humans in terms of 'stocks' of natural resources, such as soils, oceans and freshwater, and the 'services' that flow from these stocks such as food production, carbon capture and nutrient cycling.
Nature Based Solutions (NBS)	Activities that use soil, natural, and semi-natural habitats to provide key benefits such as improved water quality, reduced flooding, improved biodiversity or capturing greenhouse gas emissions.
Nature-positive	A high-level goal and concept describing a future state of nature (e.g., biodiversity, ecosystem services) that is greater than the current state.
Pasture	Land managed via grazing livestock.
Pending Issuance Units (PIUs)	Carbon credits sold upfront in carbon markets based on the expected future sequestration or emission reductions from a project. PIUs are converted into actual credits as the project delivers results.
Semi-natural grassland	Grasslands that occur on all soil types, and have not been recently cultivated, re-sowed or received fertiliser application. They are often created by low-intensity, traditional farming or from natural vegetation on poorly fertile soils, and contain a rich variety of grasses and herbs.
Species-rich grassland	Grassland with little to nil inputs. Likely to be an existing, or restorable, priority habitat. To classify as a species-rich grassland, two of the following three criteria apply: 1) <10% rye grass and white clover cover; 2) >30% consists of wildflowers and sedge; 3) >15 vascular plant species per square meter, with a wide range of grass species. Source: Department for Environment, Food & Rural Affairs (UK)
Total Income From Farming (TIFF)	A macroeconomic measure of the return to all labour and capital invested in the agricultural production process, including farmers, landowners and employees. Source: Department for Environment, Food & Rural Affairs (UK)



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Appendix 1 Carbon Markets

Farming Income for Semi-Natural Grasslands

Plantlifeife

SLR Project No: 424.064694.00002

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1.1 Carbon Markets

Climate change is the most prominent environmental issue globally and Britain's commitment to achieve net-zero by 2050 (Scotland by 2045) has implications for various other environmental, social and economic issues, not least farmers' livelihoods. The purpose of this Appendix is to explore the extent to which efforts towards net-zero using market-based approaches (which can be viewed as alternatives to other policy approaches such as regulation or taxes/subsidies) can provide farmers with fair and reliable income. The section includes recommendations for improving voluntary carbon markets, as well as a summary of the recent UK government 'nature markets framework'.

1.1.1 Voluntary carbon markets

In the UK, both mandatory and voluntary carbon markets exist. The mandatory market includes those where organisations are legally required to offset their emissions, such as the European Union's (now UK's) Emissions Trading System. The Woodland Carbon Code (WCC) and the Peatland Code (PC) stand as principal voluntary UK carbon markets, with numerous others in development. The WCC is focused on carbon sequestration credits through tree planting, while the PC addresses emissions reductions through peatland restoration. There is currently (September 2023) no Grassland Carbon Code, though there are international models such as the Grassland Protocol in the USA⁴⁴.

By the end of 2022, the WCC had documented over 1,800 projects, while the PC had registered 157 projects by February 2023. Notably, it is estimated that these markets as of 2022 operated on only 60,000 hectares, or 0.25%, of UK land.

The WCC and PC both allow participants to freely decide their involvement, in contrast to some of the other nature markets discussed in Chapter Three such as those associated with BNG. This means that there is less certainty as to the likely scale of these markets. As policy targets, like achieving net-zero, become more urgent, and with top UK companies needing to disclose climate-related financial information, the motivation to offset carbon emissions has surged, and hence there are reasons to believe that the limited activity for the WCC and PC to date will change, at least with respect to demand. The scale of the supply-side, meaning suitable and profitable carbon sequestration projects, is in many ways more difficult to predict for reasons including the intricacies of land ownership in Britain and uncertainties regarding the long-term design of projects.

The WCC and PC demand strict adherence to project requirements to ensure the integrity of carbon credits. For instance, the WCC requires specific tools for calculating carbon sequestration. Credits created under the PC and WCC cannot be used to offset overseas emissions. Perhaps the most significant constraint for these markets is the 'additionality' requirement: projects under the WCC and PLC need to be financially unviable without carbon market revenues, preserving the market's integrity but increasing associated costs. There's a dilemma when farms transition to nature-positive agriculture using personal funds and then seek carbon payments, as buyers cannot be certain of this additionality. Consequently, farmers find it challenging to secure external support for ongoing regenerative practices.

Corporate entities are now acquiring land to plant trees for carbon offset credits, sidestepping WCC or PC requirements. Two high-profile examples in Scotland are BrewDog's purchase of large parts of the Kinrara estate, and Shell's £5 million outlay to extend the Glengarry forest. In these examples, claims will be certified though likely not via the WCC or PLC, because they are unlikely to pass their additionality tests. Several

⁴⁴ <https://www.climateactionreserve.org/how/protocols/ncs/grassland/>



voluntary standards have emerged in the carbon market, with entities like Verra and the International Carbon Reduction and Offset Alliance (ICROA) providing certifications that validate carbon sequestration. While the methods to determine these certifications have evolved, some initial efforts have produced 'phantom credits' that don't accurately reflect authentic decreases in carbon emissions. Such discrepancies have raised concerns about the credibility of voluntary carbon markets. Moreover, they intensify criticisms of corporate greenwashing when businesses incorporate these questionable credits into their net-zero plans.

Farm advisory services in Wales have urged farmers to withhold from selling carbon credits presently due to potential changes in Wales' Sustainable Farming Scheme (see Chapter 2). A particular case was noted where a farm regrettably sold their carbon credits for 30 years to a beverage company and is now urging peers against such premature decisions (Food, Farming & Countryside Commission (2023)).

This situation came about because, when farmers sell carbon credits, they can't later claim them for their own decarbonisation efforts, potentially hindering them from meeting any new supply chain emissions requirements. This challenge can be circumvented if carbon sequestration is funded by a supply chain food business looking to claim emission reductions for the products they sell (this is referred to as 'insetting'). In this case, a farmer could hold verified carbon sequestration credits to be retired at the point that the supply chain company requires them. Buyers of produce and financial institutions are increasingly requiring farmers, particularly those in select premium programs, to disclose their carbon emissions.

Farmers therefore ought to be cautious about selling carbon offset credits in advance, as doing so might impede their own efforts to reduce carbon emissions. Instead, collaborating with partners to integrate carbon sequestration within the supply chain may prove more advantageous. In current carbon markets, land proprietors can pre-sell the anticipated carbon sequestration (or the equivalent reduction in emissions) expected over a project's entirety as 'pending issuance units' (PIUs). This approach offers immediate funding for any necessary operations and mitigates potential risks associated with future price fluctuations. As the actual carbon sequestration or emission reductions occur and undergo validation, PIUs get converted into either Woodland Carbon Units or Peatland Carbon Units at periodic intervals throughout a project's duration.

WCC initiatives span up to a century, necessitating landowners to pledge to an enduring alteration in land usage. PC projects require a minimum 30-year commitment. It's evident that choices made presently will resonate with future generations and that tenant farmers will have significant action restrictions.

Recent research from the Scottish Land Commission (McMorran et al. 2022) found that Scottish farmland value increased by almost a third in 2021 alone (with the value of poor livestock land increasing by over 60%), and that 'agriculture quality is no longer the key determinant of farmland value'. High prices for timber, competitive forestry grants and carbon markets are cited as drivers, which risk the conversion of species-rich grassland into other land uses, that are viewed as more profitable. This is especially pertinent in areas rich in peatland and less fertile agricultural land. Many land sales now occur 'off-market', affecting transparency. An increase in land prices is good for landowners, but not necessarily for those looking for a home, or for tenant farmers unable to afford rental costs. Both WCC and PLC emphasize the importance of local community involvement. However, merely suggesting best practices doesn't make them mandatory and the needs of the community might not be sufficiently addressed.



1.1.2 Ensuring broader environmental outcomes

The WCC guidelines recommend that projects incorporate measures ensuring positive environmental outcomes. A critical component of the validation process is the Project Design Document, which mandates demonstrations of potential effects on species, designated areas, and the visual landscape. Meanwhile, the PC mandates a Restoration Management Plan that addresses environmental concerns, such as biodiversity. Additionally, specific afforestation and peatland restoration initiatives need to undergo an Environmental Impact Assessment. However, this does not equate to a legally binding audit, and there's no ongoing mandate to track environmental consequences. If WCC initiatives get funds via the Forestry Grant Scheme, they face stricter conditions, like adhering to the UK Forestry Standard which promotes species variety. Yet, if carbon market valuations rise, dependence on government aid might decline, particularly with corporate entities keen on balancing their carbon footprint. This could inadvertently prioritize carbon absorption over other vital ecosystem services, many of which aren't prominently featured in the marketplace.

A recently published report from Plantlife⁴⁵ explores the diverse types of ecosystem services delivered by grasslands in the UK, including climate regulation but also including things like water quality, biodiversity, and cultural services such as recreation. European research by Schils et al., (2022) favourably compared permanent grasslands' ecosystem service delivery with that of croplands and forests. Grasslands are ($P < 0.001$) better for climate regulation than croplands. Of 22 studies comparing grasslands and forests, roughly a third were inconclusive and a slight majority of the others (eight compared with six) favoured forest over grasslands. Given the net-zero challenge, it might therefore be questioned why there is no grassland carbon code alongside the WCC and PC. Nascent carbon markets in the UK include the Soil Carbon Code and the Hedgerow Carbon Code. These are being developed by the Sustainable Soils Alliance and The Allerton Research & Educational Trust respectively, with funding from Defra's Natural Environment Investment Readiness Fund (NEIRF). Such schemes are more holistic and applicable to farmed lands than either the WCC or PC, but are very much at the exploration stage.

With the Soil Carbon Code, farmers have the option to engage in contracts, usually spanning five to ten years (and therefore more suitable to tenant farmers), where they adopt regenerative farming techniques. These methods, including the use of cover crops and refraining from tilling, store carbon in the soil more rapidly than the process in trees. Moreover, enriched soils offer additional benefits such as enhanced yields and better water retention. Quantifying soil carbon is, however, fraught with expensive challenges. Multiple methods exist for measuring carbon, like the Loss on Ignition and Dumas techniques, which lead to uncertainties about the optimal depth for soil sample collection. In common carbon accounting methodology, grassland soil organic carbon is often only measured to depths of 15 cm – compared with other habitats that are measured up to 100 cm depths, which risks underestimating the carbon stored at greater depths in grassland soils⁴⁶. The methodology of sampling also poses questions: whether to sample the same location consistently over time, or the merits of combining samples from various soil cores within a land segment. Even though soils can rapidly sequester carbon, this carbon is vulnerable to loss upon land disturbance like ploughing. Transitioning to regenerative farming often means investments in equipment like no-till drills and the cultivation of cover crops.

⁴⁵ <https://www.plantlife.org.uk/our-work/the-grassland-gap/> (see the 'Report: Valuing the Vital: Grassland Ecosystem Services in the UK' link available).

⁴⁶ See: <https://www.plantlife.org.uk/wp-content/uploads/2023/08/Grasslands-as-a-Carbon-Store.pdf>



There are a range of private sector options aimed at farmers looking to be rewarded for carbon sequestration and other regenerative practices, with five leading but non-exhaustive examples being:

- **Soil Capital Carbon:** Over 1,000 participating farmers, mainly in France and Belgium but increasingly in the UK too. It is aimed primarily at arable farmers for verified carbon improvements, with certificate buyers mostly located within supply chain. Uses the “Cool Farm” tool to calculate carbon footprints. Certificates are issued for carbon removals and emissions reductions. Five-year certificate generation with 10-year retention period that is verified by satellite monitoring.
- **Soil Heroes:** A Dutch firm which also has additional payments for biodiversity, nutrient density and water holding capacity. Farmers can be paid for regenerative practices, such as zero-till or organic, or can receive outcome-payments with evidence of farm practices uploaded to their platform.
- **Trinity Natural Capital markets:** Carbon certificates generated through their in-house assessment tool, which can also be associated with biodiversity and water protection benefits. Open to all types of farms. Various contracts available; including an early action contract that is backdated to reward farmers who adopted sustainable practices in the past five years and to avoid perverse incentives. Credits can be sold on an open marketplace, to corporate buyers.
- **Agreena:** Marketed as the ‘world’s leading soil carbon platform for farmers’, this Danish company targets arable farmers, using a variety of tools to estimate emissions reductions and using annual third-party verification prior to certificate issue. Certificates can be kept, traded privately, or sold via Agreena.
- **Green Farm Collective:** Led by regenerative farmers and utilises the Trinity platform for credit selling. The intention with this scheme is that buyers will pay a premium from farmers looking to improve farmland biodiversity or achieve net zero. Farmers in this scheme must have a minimum 5% of farmed area for nature, and follow principles of regenerative agriculture.

While the introduction of various private sector intermediary platforms offers promising avenues for farmers to monetize carbon sequestration and regenerative practices, the five 'blockers' to nature-inclusive farming persist. These hindrances, such as the concerns about income and costs or the limited influence of small-scale farmers, translate directly into the carbon market. Many British farmers, while eager to tap into the potential revenues of carbon markets, may feel deterred by the perceived high transaction costs, uncertainty in regulations, and the overwhelming complexity of the market ecosystem. This is a particular challenge for grasslands, in the absence of a code akin to the peatland and woodland equivalents.

The price for carbon within the WCC and PLC currently floats between £15-£20 per tCO₂e, though projections suggest this might rise significantly by 2050. Even if carbon prices do indeed increase, and soils and hedgerows are included, gross revenues for landowners and farmers are likely to be moderate: “Assuming all the available agri-carbon sequestration in our upper estimate of availability could be marketed and sold in voluntary markets at a price of £50 per tonne CO₂e, this would be equal to £650 million.” (Elliott *et al.* (2022) page 15). Given that CAP payments in 2019 were £4.3 billion, even with generous assumptions about the liquidity of carbon markets, notions of carbon markets replacing public agricultural payments are misleading.

Overall, there are opportunities for British farmers to get revenues from carbon markets. But there are multiple markets, many of which are in development and with opaque rules, and integrity is difficult to ascertain. With so much uncertainty, there is a risk that farmers get



locked-in to unfavourable projects that will last for decades. There are further hidden (or in economic parlance, ‘transaction’) costs related to prices, timing of costs and revenues, (finding appropriate) buyers, insurance, taxation and ensuring robust legal agreements. Without significant help, farmers cannot be expected to understand or favourably participate in carbon markets to the extent that will be needed to achieve net-zero ambitions.

1.1.3 Market standards

The NFU has been researching environmental markets as a prospective revenue stream for its members over the past few years. The dialogue within the farming sector regarding these markets varies from confusion to optimism⁴⁷. In 2021, the NFU carried out an investigation into carbon markets to understand their evolution, the opportunities they offer to members, and how the NFU might support these endeavours. As a result of their study, five pivotal principles for thriving environmental markets were recommended by the NFU in June 2022:

- 1 Environmental markets must work alongside the domestic production of food, energy and fibre.
- 2 Public policy and government initiatives must support the development of private markets.
- 3 Environmental markets require clear rules and standards to allow farmers and buyers to participate with confidence.
- 4 Markets should be accessible across a range of farm sizes, tenures and business structures.
- 5 Farmers must be fairly rewarded for the delivery of environmental goods.

In July 2022, the NFU conducted a workshop concentrating on fresh economic structures, where participants exchanged experiences about entering environmental markets. Issues such as baselining, project expenses, and land-sharing versus land-sparing were crucial discussion points. A further multi-stakeholder event was organised in November 2022, assembling representatives from various sectors integral to these markets' growth. The gathering emphasised collaborative engagement as essential to shape these markets beneficially.

Dieter Helm, chairman between 2012 and 2020 of the Natural Capital Committee, an independent body established by the UK government, critiques the Scottish government's methodology towards carbon storage, for example urging caution in allowing private landowners to sell carbon offsets to private companies and describing the current situation as a “wild west” of offsetting. Helm says that the government treats what is a public good (carbon storage) as a private good. Advocating nevertheless for the infusion of private incentives to yield this public good, Helm offers a strategic and holistic pathway: creating a comprehensive valuation system for carbon offsets, ensuring there are no deficits to other natural capital, and preventing the depletion of social capital.

Standards can facilitate Helm's suggested pathway, based on the following principles:

- **Project Governance:** This includes transparency, accountability, and fairness in project governance. For example, using a recognized registry can help in registering, tracking, and retiring verified credits.
- **Means of Verification:** Clear standards or principles to clarify the level of detail needed to verify environmental projects. Defining monitoring, reporting, and verification processes is essential.

⁴⁷ <https://www.nfuonline.com/updates-and-information/environmental-markets-the-nfu-s-5-key-principles/>



- **Quantifying Credits:** Code methodologies should be transparent, scientifically sound, and updated with new findings or techniques.
- **Double Counting:** To avoid credits being used multiple times, there should be measures to prevent double counting. Industry-level registries, like the IHS Markit Carbon Meta-Registry⁴⁸ and FarmVault⁴⁹, can be useful.
- **Community & Social Considerations:** Environmental projects should consider their broader impacts, especially on communities. Safeguards should be in place to prevent negative outcomes.
- **Length of Delivery:** Markets should define clear timelines for delivering environmental benefits, including maintenance periods.
- **Risk Reduction:** Considering risks like fire, disease, or climate change, projects should have mechanisms to mitigate losses. Buyers must be made aware of potential risks, especially concerning the WCC's Pending Issuance Units.
- **Buyer Standards:** Companies buying carbon credits should first focus on reducing their emissions.
- **Additionality:** Standards should clarify how to measure if benefits are additional – that is, if the project would exist without the financial incentives provided by the market.
- **Do No Significant Harm and Minimum Social Safeguards:** There's concern about the wider environmental and social effects of carbon markets. All projects should avoid significant harm to other environmental objectives and must meet social safeguards. The UK's upcoming Green Taxonomy sets criteria for these principles.
- **Gaps in Codes and Standards:** As codes emerge to address different carbon-capturing methods, there are still gaps. There's a need for standards around projects like flood risk reduction and nutrient markets.

Guidance from the Sustainable Soils Alliance for minimum requirements for high-integrity soil carbon markets in the UK (December 2022) aligns with these recommendations. The guidance focusses on evidence quality given the complexity of agricultural systems' carbon-nitrogen cycle. There is also guidance for governance, verification, additionality, permanence and the quantification of carbon credits.

As well as standards, the Green Finance Institute (2023) urges clarity from the UK government about: stacking and bundling; balancing rights of landowner and tenant farmers; and insetting.

1.1.4 Facilitating farmers' involvement in carbon markets

The principles of 'stacking' and 'bundling' represent a fundamental topic in the debate. Stacking pertains to the amalgamation of various revenue streams in environmental projects, while bundling focuses on offering multiple environmental advantages as a single package. Both principles require robust and clear guidelines, especially concerning their compatibility with the overarching principle of additionality. The call for clarity on principles like 'stacking' and 'bundling' touches upon the blocker of having clarity on returns on investments. By understanding and addressing these blockers, we can create a more conducive environment for farmers to actively participate in the carbon market.

⁴⁸ <https://metaregistry.ihsmarkit.com/>

⁴⁹ <https://www.myeasyfarm.com/en/cp-caa-lancement-farmvault/>



Tenanted holdings, which constitute 64% of farmable area in England, face obstacles since many carbon projects have contracts exceeding typical tenancy lengths, often necessitating landlord consent. Consequently, tenants may be disincentivised from engaging in such markets. Tenant farmers' reluctance to participate in private markets emanates from factors such as landlord consent requirements and the enduring nature of these capital projects. The overarching fear is the diversion of long-term financial benefits to landlords. Definitive guidelines are needed to ensure tenant farmers are equitably remunerated for their contributions to natural capital assets.

The concept of 'insetting' introduces an approach where companies invest in environmental projects, targeting a reduction in their supply chain emissions, thereby reducing subsequent offsetting needs. The potential benefits for farmers in participating in insetting are evident but challenges loom, especially in establishing clear supply chain relationships in elusive commodity markets. Notably, the fear persists among farmers of coerced, uncompensated environmental enhancements by supply chains.

Insurance companies are pivotal in managing risks for farmers selling carbon credits. For example, if a natural catastrophe occurs, the farmer could be legally bound to compensate for the lost carbon, straining their finances. Insurance policies with force majeure provisions can potentially shield farmers from such financial catastrophes, but they must be thoroughly vetted.

Under the existing inheritance tax regulations, landowners might face a heightened tax liability when they diversify into non-agricultural ventures. A full discussion is beyond the scope of this report, but VAT, income tax and inheritance tax are some of the areas of uncertainty, and there is a need for clarity that nature-positive actions will not be penalised either by forfeiting existing tax exemptions or by unexpected new tax burdens. A recent HM Treasury consultation⁵⁰ closed in June 2023 around taxation of 'ecosystem service units' and 'agricultural property' relief from inheritance tax.

A set of principles have been delineated by the UK government to safeguard market integrity and optimise beneficial outcomes⁵¹. These principles are rooted in global best practices, such as those from the Integrity Council for Voluntary Carbon Markets (IC-VCM). However, they're adaptable to all nature markets. The principles elaborate on policies in three major areas:

- Market Rules to encourage stacking and bundling; streamlining additionality; and blending public and private finance including potentially amending WCC and agri-environment payments;
- Investment Standards, with the British Standards Institute⁵² committed to fast-track interconnected investment standards applicable across home nations. New and existing codes will likely seek validation against these standards to maintain fairness; and
- Market Governance and Infrastructure, including ensuring transparency in original credit sales and the resale market.

⁵⁰ <https://www.gov.uk/government/consultations/taxation-of-environmental-land-management-and-ecosystem-service-markets>

⁵¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147397/nature-markets.pdf

⁵² The bsi have released 'Integrity Principles for Nature Investment Standards' setting out the proposed scope of their work: <https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/sustainability-and-climate-action/nature-investment/integrity-principles-for-nature-investment-standards/thank-you-ga-03ri/>



The framework prioritises integrity and adaptability in nature markets, aiming to offer clarity on rules, promote multifunctional land use, and achieve seamless integration of public and private finance. The government acknowledges the importance of a consistent approach across different schemes and invites private innovation for establishing governance standards.

The WCC and PC have been successful but on a relatively small scale. There is a need for UK standards reflecting the carbon storage potential of all habitats, as well as ensuring positive outcomes (or at least no damage) to nature via stacking income sources. Real progress has been made in the past couple of years, but navigating the various markets' requirements, partnering with appropriate buyers, securing legal agreements, calculating tax implications and arranging insurance are all formidable barriers. Intermediaries exist to help farmers, but in nascent markets it can be difficult to judge their integrity.



