



Rural Policy
GROUP



The Sustainable Food Report 2022

Enhancing the financial and
environmental sustainability of British
agriculture, food and farming

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Report delivery partners



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Foreword

Agriculture underpins everything we hope to be as a society and economy. It makes a huge contribution to the food value chain which is worth £127 billion to UK plc. Beyond the sector's immediate financial value, those who manage the land and produce food are critical to a healthy population and healthy planet.

Yet we are at risk of losing irreplaceable 'corporate knowledge' as farmers exit the industry or reduce production levels in response to the many challenges they are facing.

Such re-structuring of the farming industry would have devastating impacts for climate change, tourism & green spaces, rural communities, food security and even national security.

Immediate action is needed by government, business and science to stop this decline. To reap the environmental, social and economic benefits of agriculture, we need to reward farmers for growing food. Without financial stability in the core business, there is no ability to invest in sustainability and there will be fewer farms managing the land.

Many farms have recognised the business benefits of more sustainable production - boosting profitability, easing cashflow concerns and building resilience against volatile markets.

However, there are structural constraints to farm profitability in the food system and further progress in tackling climate change needs business and government working together to secure the future of British farming.

Mark Lumsdon-Taylor
Chairman, Rural Policy Group

About this report

This report is written primarily for parliamentarians and policymakers. It outlines the key challenges facing food producers and demonstrates the value of agriculture to achieving government goals for green growth, levelling up, public health and developing world-beating technologies.

The thoughts and recommendations presented in this report are the result of discussions between parliamentarians, leading academics and business people who have shared their knowledge, professional insights and experiences.



Directors across the food industry have an important role to play in bringing sustainability into the mainstream and supporting the wider economy to deliver its green growth ambitions. RPG unites directors with the shared goal of building a better, more sustainable, more equitable food system and provides space to explore how that might be achieved for the benefit of us all”.

Jonathan Geldart

Director General, The Institute of Directors

Rural Policy Group plays an important role in promoting and galvanizing climate positive action among food and farm businesses. Through a series of debates, it brings together policy makers, business leaders and academics to discuss the big challenges facing the food system. That dialogue has culminated in the recommendations in this report. It also contributes hugely to broadening the knowledge base in industry, preparing businesses for greener growth in the years ahead”.

Professor Simon Pearson

Founding Director of the Lincoln Institute for Agri-Food Technology, University of Lincoln

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Call to action

Who we are



Our Purpose

Rural Policy Group exists to help the UK's agriculture, food and farming businesses towards financial and environmental sustainability.

Within this purpose we specifically advocate:



A more ambitious food security target of 70% self-sufficiency by 2030.



Fair dealing and fair margin share for all businesses through food value chain collaboration.



Greater regard for British agriculture, food and farming in all policies.



Technology and innovation as driver of productivity and profitability.



Mainstreaming sustainable accounting and business-appropriate levels of ESG reporting and disclosure.

Our Mission

Farms and other food businesses cannot go green when they are in the red. Our mission is to support policymakers in the development of a policy, regulatory and tax framework to help businesses back into a position where they are confident to invest. Equally, we work to guide businesses in translating government policy initiatives into action and reward while ensuring industry leaders are knowledgeable about the business benefits of sustainability and aware of the opportunities available to them in a green UK plc.

How do we do this?

1 RED Talks: through a series of interactive rural economic development web sessions, RPG facilitates dialogue between industry figures and grassroots businesspeople, parliamentarians and policy influencers and academics involved in science, research and innovation. These three spheres of influence converge to share different perspectives and achieve greater alignment of ambitions and synergistic action for the food industry. RED Talks have also been used to discuss the big food issues of the day and promote the development of green markets and debate the opportunities available to landowners, as producers and consumers.

2 APPG on Fair Value in the Food Supply Chain: working with parliamentarians in both Houses we are seeking to establish an APPG. The aim is to raise awareness amongst policymakers of the challenges within the food value chain, make recommendations to inform government policy and influence the design of national frameworks for collaboration and regulation in the supply chain.

3 Agri-Food Price Cluster: RPG has established a 'virtual cluster' to foster collaboration and best practice among stakeholders in the food value chain and address pinch points which inhibit food supply and food standards. The cluster investigates how we square the circle of improving profitability for businesses while keeping food affordable for consumers.

This virtual cluster is the first in a series aimed at tackling key problems with the food system. The second cluster to come online will be dedicated to the issue of food security.

Our Background

Rural Policy Group was established in 2019 and began delivering RED Talks during the first period of lockdown to support rural businesses and examine the impacts of Covid on the food supply chain. It is backed by an Advisory Council of industry experts and receives valuable input from representatives in parliament, business and leading universities.

RPG is politically neutral and has welcomed support from the Conservatives, The Green Party, Labour, Liberal Democrats, Plaid Cymru and the SNP. This stance is respected by grass roots business and institutional audiences who value the impartial dissemination of national policy in a way which facilitates an actionable business response.

RPG has an international audience of over 3,000 businesses and organisations from the UK, India, Africa, the United States and Europe with interests in food, farming, land agency, climate change, nature conservancy and clean energy.

The Value of Agriculture, Food and Farming

The food supply chain is worth £127 billion to the UK economy, contributing 9.8% GDP. It counts among its number six FTSE 100 constituents with a combined market capitalisation of just under £139 billion: Tesco plc, Diageo plc, Coca Cola plc, Sainsbury's plc, Associated British Foods plc and Ocado plc.¹ Farm to fork, the food supply chain employs a 4.2 million strong workforce².



¹ London Stock Exchange, 23 April 2023

² Industry at a Glance, Food and Drink Federation, 2022

What is the food supply chain?

The food supply chain is the network of stakeholders involved in growing, processing, distributing and selling the food people eat.



Producers

Research and development
Farming
Trading



Processors

Harvesting
Butchering
Processing
Value-add processing
Manufacturing
Marketing & sales



Distributors

Distributing
Retailing



Consumers

Shopping
Consuming



Government/ NGOs/ Regulators

Public health & safety
Public policy
Food & product safety
Security (e.g. resource, land and food availability and allocation)
Policy & support

The importance of domestic agriculture

Agriculture is the foundation on which the food value chain is built and in 2021 it contributed £11.2 billion³ to the national economy, employed about half a million people, supplied half the food we ate and managed 71% of UK land.

Farming sits at the lower end of the value proposition within the food industry and tight margins are a cause for concern; if farmers go out of business or reduce production, the rest of the supply chain will follow suit. A reduction in domestic food supply cannot be allowed.

The UK population is set to grow to roughly 72m by 2045, up from 67.5 million in 2022.⁴ Farming will need to be better incentivised just to maintain self-sufficiency levels in line with population growth irrespective of the desire to increase food security levels as a matter of national interest, as laid out in the Government Food Strategy.

“Successful domestic production is what gives us national resilience in an uncertain world”⁵

Repeated economic shocks in the global system have contributed to marked volatility in food prices. Furthermore, the UN estimates that food production will need to increase by 70% by 2050. This uplift will become increasingly difficult to achieve as more agricultural land is employed in bioenergy and green energy. In 2019, 1.6% of arable land was used to grow bioenergy crops, an increase of 1% since 2015. Higher demand and more scarce resources will lead to higher prices, less choice and more volatility. Shortening supply chains and producing more food at home will help protect UK consumers.

³ Total income from farming in the UK 2021, Defra, 2022

⁴ The Impact of Migration on UK Population Growth, The Migration Observatory, 2023

⁵ Government Food Strategy, 2022

⁶ Total income from farming in the UK 2021, Defra, 2022

⁷ Farm Business Income by Cost Centre 2021/2022, Defra

⁸ Total income from farming in the UK 2021, Defra, 2022

⁹ Total income from farming in the UK 2021, Defra, 2022

The Agricultural Balance Sheet

Agriculture's contribution to the national economy grew in 2021 by £0.9 billion as a result of growth in both livestock and crop outputs, and despite income from subsidies falling. Subsidies in 2021 represented 9.9% of farm income, down from 12% in 2016. The biggest contributors to livestock output were milk at £4.7 billion and beef at £3.2 billion. Milk also had the biggest YOY increase in value, up 7.8% from 2020. Wheat was the largest contributor to crop outputs while fruit production fell in value, partly due to an 8% fall in the average price of food and decreasing production levels.

Rising input prices, particularly those associated with feed, fertilisers, labour and energy, are not reflected in the sale prices which can be achieved and declines in production are likely to deepen and limit the contribution farming can make to the national economy. In numerical terms, the median return on capital invested was -0.2% in 2020/21 and 52% of farms had a negative return on investment.⁶

Pig and poultry farms, producers of the key ingredients for the beloved-by-many eggs & bacon breakfast, had the highest average debts of any sector at £625k per farm. The market for pig meat also grew by -2.6% YOY to 2021 and yielded a 7.7% fall in price to the producer.

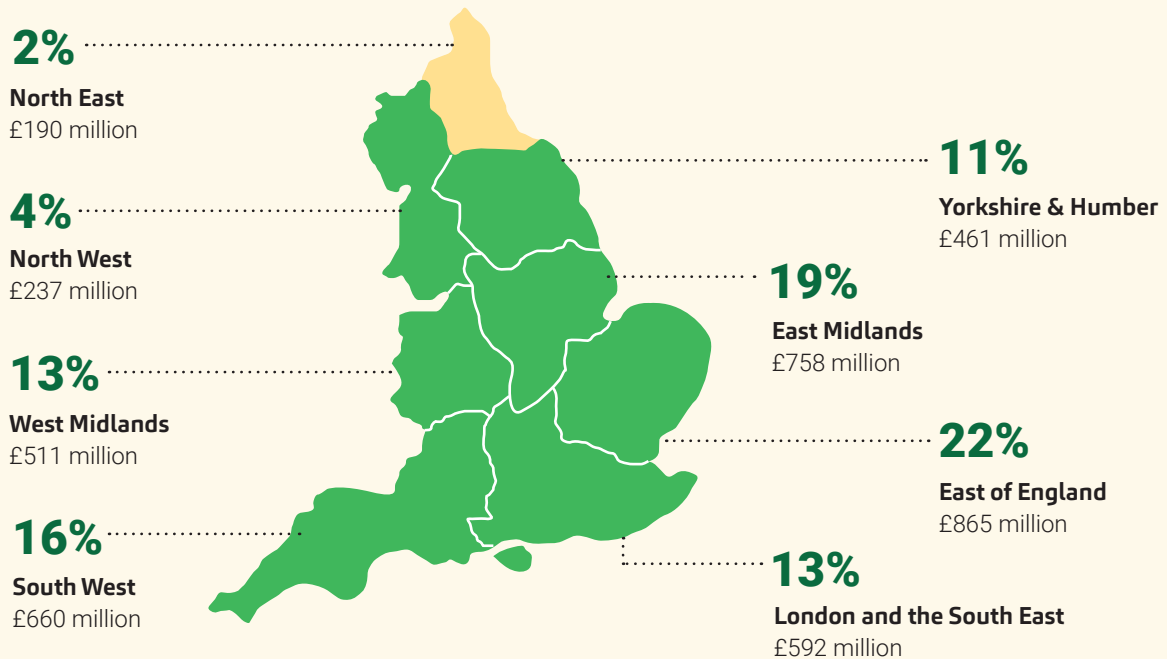
In 2021/22 the average farm income was £86,000 with only 48% coming from agricultural activity. The remainder was made up of 32% coming from subsidies and 19% from diversified activities such as renewables and tourism.⁷

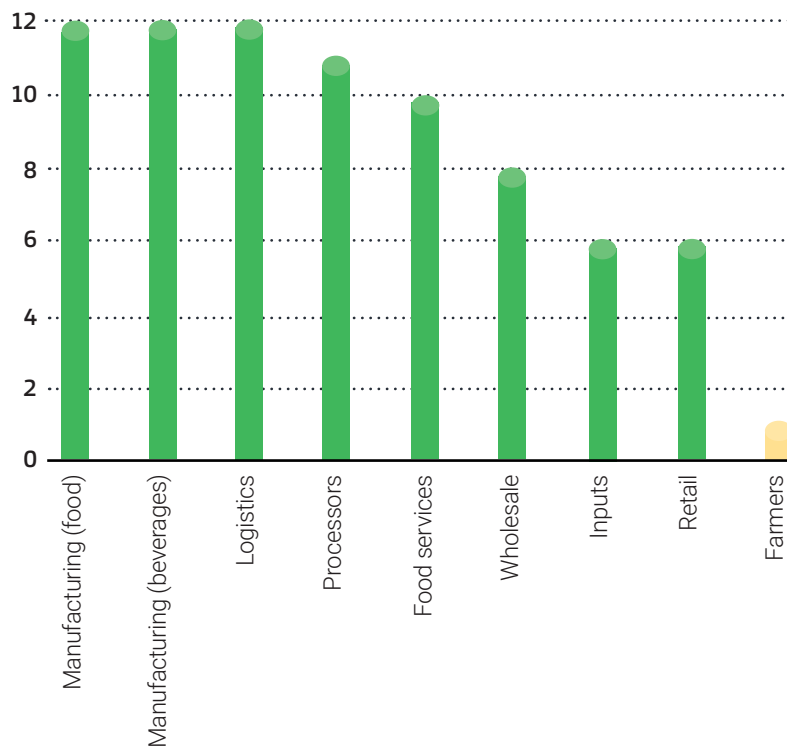
Land is the largest fixed asset in agriculture with a value of £243,756 million. Asset growth between 2020 and 2021 was 1.4%, of that 1.2% is attributable to increases in land value leaving only 0.2% attributable to other assets.

Agriculture represents 0.5% of GDP⁹ although this masks its importance to levelling up more rural locations. The distribution of wealth creation and opportunities from agriculture varies across the UK and is a significant source of economic growth and resilience in rural areas such as Yorkshire, East Anglia and Lincolnshire.

Item	2018	2019	2020	2021
Total Fixed Assets	262,777	275,284	286,416	290,187
Total Current Assets	15,435	15,334	16,306	16,676
Total Assets	287,212	290,619	302,722	306,863
Total Long and Medium Term Liabilities	14,640	15,286	15,523	15,696
Total Short Term Liabilities	6,235	6,003	5,466	5,543
Total Liabilities	20,875	21,290	20,989	21,239
Net Worth	257,337	269,329	281,733	285,624

Total Income from Farming (Net)





Share of value in the food supply chain

Compared with other parts of the food chain UK farmers make low returns on investment and this contributes to over half of farms being loss-making.¹⁰

< Return on capital employed (%)

The rise of the agritech sector

The reach of agriculture’s contribution to UK plc extends to the development of a thriving agritech sector. Agritech is the term used to describe the technology used in farming to improve productivity, efficiency, sustainability and profitability.

The agritech sector has a turnover of £11.77 billion, projected to rise to £13 billion by 2027. It is one of the top 10 fastest growing recipients of Innovate UK grants and one of the fastest growing sectors for venture capital funding.

The agritech sector is made up of 1,230 companies employing 36,000 people, with companies growing on average 3.2% per year. These companies are engaged in a variety of science, research and innovations including automated technologies, drone technology, agricultural sciences, vertical farming, remote sensing and precision farming.¹¹

¹⁰ National Food Strategy, 2021

¹¹ Thedatacity.com, 2023

¹² Industry at a Glance, Food and Drink Federation, 2022

¹³ Kantar, 2023

Food and drink manufacturing

The food and drink manufacturing sector, which relies on agriculture and farming for inputs, is the UK’s largest manufacturing sector. It contributes more to the UK economy than automotive and aerospace manufacturing combined. It delivers domestic sales of £113 billion, exports of £25 billion to over 220 countries and provides 468,000 jobs.¹²

Grocery retail

The UK grocery market is dominated by a small group of supermarkets – Tesco, Sainsbury’s, Asda, Aldi, Morrisons and Lidl – who hold a huge amount of influence over the supply chain and are making record profits in 2023. As people switch their shopping preferences to prioritise better value, Aldi and Lidl have become mainstream and sales of own brand products are growing three times as fast as branded products.¹³ Fierce competition in the grocery sector to win value conscious customers suppresses pricing throughout the supply chain. For agricultural producers this can mean selling for below the cost of production or very near to it, a situation which is not sustainable in the long term.



200,000

More than 200,000 farm holdings in the UK

4.2m

4.2 million employed in the food sector.

17m

More than 17 million hectares of agricultural land AgriTech is worth nearly £12 billion.

£127bn

£127 billion contribution of the food supply chain to the UK economy

£36,120

£36,120 average farm income from agriculture

Sustainability Report

Whilst many businesses are considering how to be more efficient and focus upon their route to being greener or indeed driving their agenda to becoming net zero - the robust reporting on climate considerations is becoming a must for business. Whilst the Task Force on Climate-related Financial Disclosures (TCFD) relates to only large entities (£500m turnover and 500 staff) – these regulations are being cascaded through the business ‘food chain’.

This is also more than a tick-box exercise for a company's annual report, TCFD reporting provides consistent, decision-useful and forward-looking information on the material financial impacts of climate change.

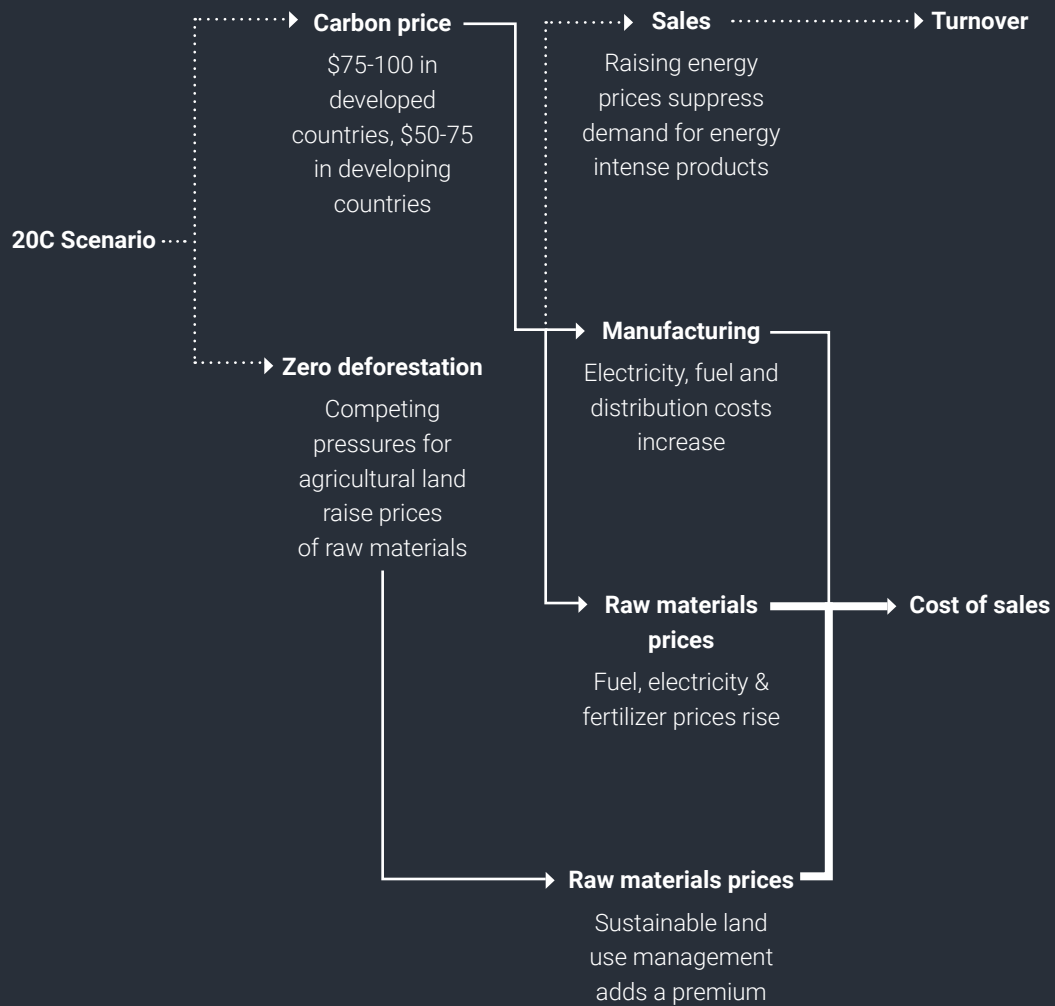
This framework is designed to reshape business and providing the gold corporate standard on sustainability-related financial disclosures. Nearly 60% of the world's 100 largest public companies support the disclosures or reporting in line with the TCFD recommendations and various countries are taking steps to encourage or mandate TCFD implementation and in the UK, the Financial Conduct Authority and UK Government have set a path to mandatory TCFD reporting. With the government pledge that by 2025 all companies will be reporting some form of climate analysis, and with the EU committing to an abridged version of Climate Sustainability Reporting Directive (CSRD) for companies with turnover over 40m Euro. These standards are coming down the track to business and must be seen as a framework benefit as well as a reporting requirement.

TCFD disclosures can help pinpoint how climate change could affect revenue and costs, and challenge long-held assumptions of future value – both where value might be eroded and where it can be created.

These insights help inform strategic decision-making and the choices needed to be made to grow your organisation. Elements of the TCFD framework can be applied industry-wide, regionally or even nationally where there is systemic cooperation to model the cost of carbon, costs and ultimate impact on the profit and loss account of business (valued in \$ for global comparison).

Therefore, TCFD disclosures start to provide a clearer understanding of where and how to make low-carbon investments, and often kick-start broader strategic questions on the optimal business model design to succeed in a climate-compatible future. It provides a confidence boost for stakeholders. Finally, as we expect, assurance can help support strategic objectives and risks associated with unchecked ESG claims and ‘greenwashing’ considerations. It's likely that external assurance over TCFD disclosures will soon become mandatory and the evaluation of the agriculture and food economic GVA can in fact take the lead by reporting at a level in excess of current legal requirements.

One of RPG's two core principles - food security for the UK of no less than 70% by 2030 – has now entered the mainstream. Food Price Inflation is complex and the ever increasing demand for outputs has driven the expansion of agriculture and led to the clearance of natural ecosystems around the world. In parallel, population growth and rising consumption has led to freshwater scarcity and loss of natural systems and biodiversity. Globally, the rate of soil erosion is currently estimated to be between 10 to 100 times higher than soil formation and emissions from land use account for almost one-quarter of anthropogenic greenhouse gas (GHG) emissions. The main sources of agricultural emissions are livestock production, inefficient application of chemical fertilizers, diesel and oil/petrol use, land use change and manure management. UK farmers often outperform the rest of the world in the environmental sensitivity of their methods and use of inputs; the GHG footprint of UK beef is half that of the global average.



..... Low impacts <€100m

—— Moderate impacts €100m-€500m

—— Significant impacts >€500m



New Markets

Enter new markets and customer segments:

The circular bioeconomy can help improve **financial performance** and company growth rates by e.g. creating **new markets**, accessing **new customer segments**, sourcing responsibly and enabling **new value chains**.



Competitive advantage

Provide competitive advantage

Companies can do business with less environmental impact. This will give competitive advantage, **attract and retain talents and new customers**.



Risk mitigation

Mitigate regulatory and societal risks:

Companies can actively **reduce regulatory risks** of upcoming regulations in areas such as climate change or waste management. Companies can **be at the vanguard** in societal shifts towards material bans or investors' demand

By agriculture & food businesses using the TCFD Principles of Climate, Risk, Metrics & Governance to manage their corporate business in a different way – the way in which collectively the UK rural economy can positively contribute to the government's ambitious strategy an be both coordinated and measured – with clearly reported outcomes.

.....

This concentration of GHG emissions at the point of production means that companies further downstream in agricultural supply chains – such as product manufacturers and retailers – tend to be viewed as having relatively small scope 1 and 2 emissions and larger scope 3 emissions. Value chain emissions due to food loss and waste during the journey from farmer to consumer are also material for downstream companies – some 14% of the world's food is lost from production before reaching the retail stage. In the face of these challenges, pioneering companies are taking transformative steps to mitigate GHG emissions in agriculture and to actively sequester carbon in line with the goals of the Paris Agreement.

Building the TCFD mindset:

- utilising effective risk management illustrating key transition and physical climate change-related risks and opportunities and how they might impact food, agriculture, direct operations, financial performance, supply chains and customer base.
- disclosing information about opportunities to develop solutions and products that support the low carbon transition. These include technology-enabled agricultural and forestry practices, investments in natural climate solutions, healthy and sustainable food products, and circular biobased solutions.
- improving strategy and governance with climate considerations integrated into corporate processes, innovation and investment in new products and services that leverage opportunities associated with climate change.
- calculating metrics and targets that measure impact, performance and response on greenhouse gas (GHG) emissions, water consumption and energy usage. Further measurement the impact of products across value chains position business to meet the needs of climate mitigation.

The TCFD framework is fundamental to the future of agribusiness and the future of the climate.

Agricultural contribution to government goals

As an equigenic industry, agriculture, food and farming's contribution goes far beyond its £11,222 million per year to the national economy.

Levelling up

467,000 people were working on commercial holdings in 2021, and many more are employed in the supply chains and world-beating agritech research and innovation sector which exist to support British farm businesses. All these enterprises provide training, skills and opportunity for people in rural and isolated locations, who often have few alternative sources of employment. And incomes earned in agriculture and its allied industries circulate within the local economy to support pubs, shops and other businesses. Without farms driving wealth, rural communities will be hollowed out as people move away to find work and local amenities lose custom.¹⁴

Health benefits

Food is a basic human need; without it we cannot survive. To be productive and healthy, we need high quality nutrition. Healthy food is nearly three times more expensive than less healthy obesogenic foods, and the price difference is getting wider. Between 2021 and 2022 the price of healthier foods rose by an average of 5.1% compared with 2.5% for less healthy options and is one of the main reasons why there is a 20 year age gap between the wealthiest and poorest members of society.

Declining levels of food production will only serve to make healthy foods more expensive and less accessible to those with lower incomes and increase demand for NHS services. Excess weight related illnesses cost the UK circa £74 billion in direct NHS expenditure, lost workforce productivity and reduced life expectancy. Redirecting public resources into a health-creating, nutrition-rich diet will reduce the burden of malnutrition on health and social care services and improve workforce productivity.¹⁵

Providing green spaces

Farms have shaped the countryside. They provide and maintain green spaces which have myriad health benefits. Green social prescribing is known to improve mental health outcomes, reduce health inequalities and reduce demand on health and social care services. NHS England itself recognises the importance of nature-based interventions in healthcare and has committed to significantly increasing the number of social prescribing link workers working alongside GPs. The 120 Minutes a Week in Nature study led by the University of Exeter and published in 2019 estimates that prescribing contact with nature gives a return of £6.88 on every £1 invested.

Environmental goods

Engaging the farming community will be crucial to the successful delivery of a greener UK plc and achieving key sustainability goals such as net zero, nature recovery, reversing biodiversity loss, nutrient rich soils and clean air and water. The Environmental Land Management Scheme is a welcome support for many farms, though the delivery of public services must be viewed in large part as a diversified business opportunity requiring investment and working capital. It cannot be conflated with the core business of food production; farmers are price takers and ELMs payments are not subsidies which enable farmers to accept the prices offered to them with adequate margins. Unless farmers receive fair value in return for their effort, they will continue to reduce production levels or even exit the industry. This loss of knowledge will have a devastating effect on sustainable land use.

National security

Trading partnerships with countries around the world contribute greatly to our enjoyment of food. Diets today reflect international travel and the different cultures which form British society. However, a series of economic shocks has highlighted the fragility of complex global supply chains and the importance of having a resilient food system grounded in domestic production to retain greater control over pricing, choice and security of supply.

¹⁴ Agriculture in the United Kingdom, www.gov.uk, October 2022

¹⁵ The Broken Plate, The Food Foundation, 2022

The importance of farmers markets to the food system

Bob Taylor, Kent Farmers' Market Association Chairman explains the many benefits of farmers markets. They are a breeding ground for food entrepreneurs, health promoting for consumers, prices have risen slower than food price inflation as a whole and they even have the potential to save the local High Street.

Farmers market overview 2019 -2023

Farmers Markets attract both shoppers who are really interested in purchasing fresh local produce as well as the casual shopper simply looking for an attraction as well as a different way of shopping.

The great majority of Farmers Markets were closed during the pandemic, except a few which devised ways of enabling shoppers to continue to shop without mixing (e.g 'online plus drive thru'). By mid-2021 all outside markets had reopened albeit under strict queuing conditions and by the end of 2021 all were opened except 3 which failed to re-open. Since then, we have seen 5 new markets open - the total number of market days in Kent has risen from 950 to 1100 over the last 2 years, a 15% increase.

During 2022 our markets also expanded in terms of footfall though only a few managed to reach the heights of 2019 which was a record breaking year in terms of footfall for most markets. The media has certainly helped this growth with emphasis on the benefits of eating local produce and farmers markets have managed to thrive through the 2022 inflationary period in a relatively buoyant mood.

In fact, Local Authorities are seriously looking at this sector as a low cost investment to encourage shoppers to support their local High Street, rather than travel to out of town shopping centres.

Numbers of producers

In Kent we have seen a large increase (from a base of 500-800) in the number of producers over the last two years selling at Farmers Markets; producers are attracted to setting up their own small businesses at home.

Impact of inflation on farmers markets

Apart from the larger farm units, which have been hit by the cost of energy, fertiliser cost and lack of manpower, the average small one/two person business has managed to keep afloat with very small increases in retail price. Most producers have kept price increases below 5%. On the other hand, we, as retail outlets, have been slow to impart this good news to the shopping public.

Our strategy for 2023 onwards

Parts of the shopping public and sections of the media have woken up to the facts that shopping locally not only has cost benefits for them, but it has positive long term health and environmental benefits as well as impacting on the local economy. Money spent locally tends to be spent again in the local economy. Our strategy is based on expansion of this publicity to widen this knowledge and information to attract more footfall. This is based on getting our message across via our EatDrinkKent project which encompasses social media, a new website and printed seasonal food magazine. In addition, we are keen to work with Local Authorities to invest in more innovative and low cost approaches to persuade local people to shop locally.



Kent Farmers' Market Association

Supporting
Farmers'
Markets in
Kent & the UK

Publisher of
Eat Drink Kent
Magazine

Supporting small
producers in
Kent &
surrounding
counties



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The UK Food Valley:

a model for rural economic development

Rural enterprise is often undervalued and underrepresented in policy decision making; RPG contends it deserves more consideration in the decisions which affect peoples' lives. Greater Lincolnshire and Rutland Local Enterprise Partnership (LEP) have brought rural food businesses in from the cold and the UK Food Valley developed in that region demonstrates the potential of agriculture, fisheries and food to deliver substantial social and economic benefits.

The UK Food Valley industry profile

The UK Food Valley programme supports the food industry from farm to factory gate in the Greater Lincolnshire and Rutland Local Enterprise Partnership (LEP) area. The food chain is at the heart of the Greater Lincolnshire economy, with the area employing 75,000 people in agriculture, food processing and food distribution. **The agriculture and processing food chain represents 14% of the local workforce** compared to 4% nationally and is identified as one of four 'game changer' sectors for Greater Lincolnshire.

The area is unique in terms of the breadth of its food sector, with nationally leading shares in multiple sub-sectors of the industry, as well as having depth and breadth at every stage of the food chain from on farm production, through food processing to marketing and distribution. This in turn supports a thriving community of specialist machinery, input supply, professional, academic and consultancy teams who support the core food production industry.



Clusters

The UK Food Valley has a number of key clusters in which it is the UK leader including:



Fish Processing

North East Lincolnshire is the UK centre for fish processing, with 60% of UK fish processing taking place in Grimsby and the immediate area. With a mix of the leading international businesses in the sector and 60 SME fish processors and over 100 'fish vans' which deliver to homes, shops and catering outlets across the UK, the Grimsby fish processing cluster is the 2nd largest in the Northern Hemisphere. The cluster directly employs 5,900 in fish processing, rising to 10,000 jobs with the associated supply chain. In the last 3 years the area has also begun to see the development of an aquaculture sector to meet the need for more UK sourced fish supply. The first unit, a warm water prawn farm, was granted planning permission in 2022 in South Lincolnshire and the UK's first on land salmon farm using Recirculating Aquaculture System (RAS) technology is proposed for a site in Grimsby. There is a strong pipeline of other RAS proposals in the area.



Fresh Produce

The UK Food Valley is at the centre of the UK fresh produce industry, with Spalding and Boston in South Lincolnshire at the heart of the industry, with a cluster of major farm producers, processors, traders and distribution companies. In the two districts of South Holland and Boston, the farming, food processing and food distribution sector supports 30,000 jobs, with the food chain in South Holland employing 42% of the workforce compared to 4% nationally.

Greater Lincolnshire is responsible for a high share of national multiple fresh produce crops, including 26% of England's vegetables and salads, 19% of ornamentals and 13% of potatoes. This has led to the area having the UK's leading concentration of fresh produce processors, traders and technology suppliers. Major processors and traders include Bakkavor, AH Worth, Staples, Branston Potatoes, Worldwide Fruit, Burgess Farms, FESA, LFP, Melon and Co. Karsten UK, Ripe Now, JEPCO, JDM Food Group and many other UK leaders.

The UK Food Valley has a long established greenhouse horticulture sector, which DEFRA recorded as covering 89 hectares (218 acres) in 2016. Since 2016 the UK Food Valley has seen multiple new large greenhouse projects, including Bridge Farm, Globalberry and Dyson Farms, which have already increased the greenhouse area by 50% growing a range of ornamentals, fruit and salad crops as well as adding extra R&D capacity to the industry. In the next 3 years further substantial greenhouse investments are planned.

Ornamentals production is a key strength of the UK Food Valley with 19% of national production, as well as the UK's leading import, processing and trading hub for ornamentals in South Lincolnshire centred on Spalding. As well as B2B sales, the area is also home to major UK companies which supply garden plants directly to consumers, including leading online retailer You Garden and the British Garden Centres group with over 60 sites across the UK.



Food Logistics and Marketing

Greater Lincolnshire has 17,000 staff employed in food logistics, storage and marketing with major clusters of food logistics in South Holland and Boston, centred on Spalding, on the South Bank of the Humber and on the A1 corridor in the west of the LEP area. The area is very strong in the cool chain and cold storage sector, with Grimsby having Europe's largest cold storage cluster including major investments by the World's largest cold storage business Lineage. In Spalding Americold have recently acquired the former Bowman's cold stores and the concentration of major fresh produce and meat processors all have additional cold storage capacity, including for fruit specialist ripening facilities. Magnavale have existing cold stores in Scunthorpe and Easton (near Grantham), with the Easton site also home to the development of a UK leading 100,000 pallet cold store which is due to open in 2024.

A report by ONS in April 2022¹⁶ ranked districts by the percentage of business in the logistics sector, showed that since 2011, South Holland District had risen from 23rd most concentrated to 2nd most concentrated, nationally with Boston rising from 36th place to 10th place. In South Holland the logistics industry is now the largest sector by premises count (termed the 'dominant' industry by ONS).

Leading UK food logistics companies such as Fowler Welch (Culina Group) and FreshLinc are headquartered in the UK Food Valley, which also has hubs for Turners, Marks and Spencer, XPO, DFDS, Morrisons and many others. The cluster of food logistics builds on strong food production as well as being the UK leading centre for fresh produce importing and trading in Spalding and fish importing in Grimsby.

¹⁶ ONS (April 2022), The rise of the UK warehouse and the golden logistics triangle



Meat and Eggs

The UK Food Valley is home to 8% of England's poultry farms and produces 20% of the nations' ducks, 18% of chickens and turkeys and 7% of eggs. The focus on poultry also includes meat processing with the UK's two largest chicken producers, 2 Sisters and Moy Park, both having major production facilities in the UK Food Valley area. The UK's 2nd largest egg packer, Fairburns Eggs is headquartered in the UK Food Valley and Noble Foods, the UK's largest packer has 2 of 5 national centres in Lincolnshire. As well as poultry, Lincolnshire has 7% of the English pig herd and is a centre for pig meat processing as well as lamb and beef. Leading UK meat processors including Pilgrims Pride (Tulip Ltd in Ruskington and the former Kerry Foods site in Gainsborough) and Morrisons Woodhead site in Spalding for beef and pork, all have major processing plants in the UK Food Valley.



Arable Crops

Lincolnshire has the largest combinable crop output of any UK county, with about 12% of England's arable crop area and 11% of cereal output. This concentration has led to major supply chain businesses such as Frontier Agriculture being based in Lincoln. The arable sector is also closely linked to meat and egg sectors, as a supplier of livestock feed. There are also major grain trading centres on the Humber and in Boston, which facilitate international trade in grain.



Plant and Alternative Proteins

Greater Lincolnshire is seeing major new investments in plant and alternative protein production. As a historic centre for peas and beans with factories for Princes and Greenyard Frozen for peas and ADM for beans, the area is responsible for 11% of national dried pea and bean production. More recently the area has seen Europe's largest plant protein factory created by Plant and Bean in Boston, a new plant to extract potato protein from lower grade potatoes developed by Branston Potatoes and planning permission granted for a new World leading factory to use lower grade vegetables to produce plant proteins at Naylor Nutrition in Spalding. This commercial cluster also builds on Elsoms, the UK's largest independent seed company which specialises in pulses and vegetable crops.



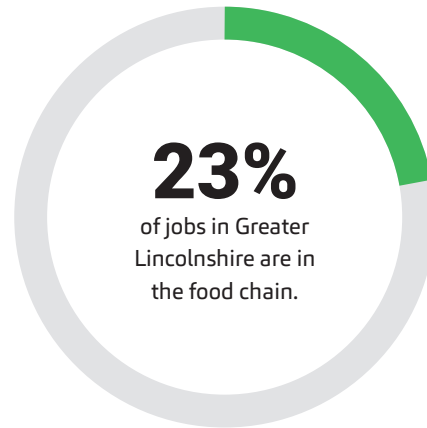
Agritech and Food Technology

Lincolnshire has a long history of agricultural engineering and food innovation, which is replicated in the National Centre for Food Manufacturing (NCFM) and the Lincoln Institute for AgriFood Technology (LIAT), both of which are leading UK centres for skills and innovation in the industry. Since 2016, over £100m has been invested in new facilities for agrifood technology skills and innovation at the University, Bishop Burton College's new campus at the Lincolnshire Showground and through the Lincolnshire Institute of Technology which focuses on agrifood and linked engineering. A further £100m has been raised for collaborative applied research and innovation projects with industry and LIAT is the single largest deliverer of government supported innovation projects in the agrifood industry. The University now has approaching 200 postgraduates on agrifood technology and PhD programmes, including leading the World's first Centre for Doctoral Training (CDT) in agrifood robotics and digital supply chains.

The focus on innovation is supported by the 40 acre South Lincolnshire Food Enterprise Zone on which NCFM is the anchor tenant, which is hosting a cluster of food technology businesses.

Just to the north of Lincoln, the Riseholme Campus of the University of Lincoln which is the home to LIAT, is at the centre of the Agricultural Growth Zone (the Ag Zone) launched in 2022. The Ag Zone brings together LIAT, Bishop Burton College, Lincolnshire Agricultural Society and the only Barclays Eagle Lab nationally to concentrate on agritech, which is co-located with LIAT. The Eagle Lab now has a network of 140 agritech businesses engaged with its physical and virtual programmes to support agritech start-ups and high growth companies.

The Ag Zone already hosts high growth agritech companies focusing on crop nutrition, new biomass crops, automation and robotics, digital and AI services for the agricultural and food sectors. Across the UK Food Valley, innovative technology providers such as Elsoms, B-Hive Innovations, Saga Robotics, Tong, Househem spayers, OAL, AMP Rose, Fruitcast, Agaricus Robots, Terravesta and many others are leading the development of UK agritech.



Employment

The food chain is at the heart of the Greater Lincolnshire economy, with the area employing 75,000 people in agriculture, food processing and food distribution in 2021. The agriculture and processing food chain represents 14% of the workforce in the UK Food Valley area compared to 4% nationally.

The consumer food chain, including food retail and catering, employs a further 47,000 people, taking total food chain employment to over 120,000 or 23% of all jobs, compared to 13% across the UK.

On a like for like basis the UK Food Valley area has increased food chain employment by 7,000 since 2012, with growth in sub-sectors as diverse as food processing, wholesaling, food retail and catering. The academic and research staff team have also grown rapidly as the UK Food Valley has worked with the University and College sector to focus on the needs of the food sector.

UK Food Valley Economic Development Model

The UK Food Valley is ambitious for the future of the food chain, from end to end and in 2014 the LEP set a target to double food sector GVA from 2010-2030. It has taken a very commercial focus to the sector, prioritising support for businesses to invest whilst at the same time embracing the latest technology to drive productivity growth and improved sustainability.

The UK Food Valley supports all businesses from start-ups to investment by the largest international food chain companies. The support is based on the Triple Helix principle of active collaboration between industry, government and the knowledge base, to drive sector growth. Recognising that even through collaboration it is not possible to do everything, in 2021 the Greater Lincolnshire Food Board decided to focus on three 'big bets' to grow the sector:

Automation and Digitalisation of the Food Chain

To exploit the productivity and sustainability benefits digital technologies can offer to the food chain. This includes digital supply chain tracking, the use of big data analytics and AI and the use of digital technologies to deliver enhanced automation and robotics to create higher GVA, better paid and more interesting jobs. With LIAT created in 2016 to address this challenge, by 2023 the University of Lincoln will have over 50 PhD students, 200 MSc students, a growing cluster of technology businesses and Europe's largest team of academics focused on food chain automation.

Low Carbon Food Chains

To help the food chain use lower carbon forms of energy, reduce emissions and address waste to enable low carbon food products to be produced. The UK Food Valley area is investing in renewable energy systems and looking at how food is produced, including new forms of crop nutrition as well as technology to reduce the emissions associated with food processing, storage and distribution.

Naturally Good for You Foods

The UK Food Valley is the leading UK region for naturally healthy products including vegetables and salad, fruit processing, fish processing and the growing plant protein sector. The Food Valley is prioritising the development of the naturally good for you food chain, to ensure it is competitive, grows and helps meet the dietary health needs of the population.

The UK Food Valley does try to attract grant aid to support investment by businesses, particularly small business and starts up or for innovation and skills projects, but the Food Valley is primarily focused on making the investment climate in the food sector conducive to commercial investment. The team work with the clearing banks, venture capital providers and commercial investors to secure the investment needed for growth.

Other key activities to support food sector growth include:

Networking - facilitating the development of networks between industry, innovation and government to drive growth through collaboration and co-investment.

Promoting the UK Food Valley - as a destination of choice for investors, whether home grown start-ups and growth businesses or from international companies looking to invest in the UK. A proactive approach to attracting inward investment is facilitated through regular participation in international industry events and via a High Potential Opportunity (HPO) supported by government focused on Automation in the Food Sector.

Providing Investment Sites - to deliver a soft landing for investors by helping them find commercial property to support their growth needs. This includes three Food Enterprise Zones (FEZs) and an Agricultural Growth Zone (Ag Zone), as well as private sites which are suitable for larger sites for food factories, green-houses, fish farms or technology led businesses.

Developing an Innovation and Skills Cluster

Over £100m has been invested in new capital infrastructure for agrifood skills and innovation since 2016, at the University of Lincoln, at Bishop Burton's new Showground Campus, in Lincolnshire Institute of Technology and by commercial businesses. A further £100m has been secured since 2016 for collaborative R&D with industry, with over 120 projects involving over 200 industry and academic partners developed.

Developing a Cluster of Technology Businesses

A cluster of innovative technologies companies has been developed including those based at: the Holbeach campus of the University of Lincoln at the National Centre for Food Manufacturing (NCFM) on the South Lincolnshire FEZ hosts food technology companies; the Riseholme campus of the University is home to the Lincolnshire Institute of AgriFood Technology (LIAT) and hosts an agritech company cluster; the Lincoln Science Park also has agritech tenants.

Energy, Water, Digital and Transport infrastructure

The UK Food Valley has worked with Councils and government to make the case for and invest in infrastructure to support the food chain. Priority areas are the supply of energy and transition to low carbon energy sources, protection from flooding and the supply of water, the roll of digital connectivity both through high speed broadband and the adoption of 4G and 5G (including the UK's first 5G agritech testbed) and improvements to key food logistics routes such as the A16.



UK Food Valley - the economic analysis

Context

The analysis of the economic contribution of the agrifood sector is complicated by major disruptions from spring 2020 onwards in the regional and UK food chain (and the rest of the economy) due to:



1

The Covid 19 pandemic - this disrupted supply chains and led to food retail having a boom, as consumers stayed at home and bought more food for home consumption, whilst eating out and 'on the go' declined.

2

Brexit which changed the UK's trading relationship with Europe from the end of 2021, leading to increased import prices and reduction in food and drink exports to Europe.

3

The War in Ukraine, which from 24 February 2022 created very large changes in the cost of inputs (e.g. energy, fertilisers, livestock feed) and outputs (farm gate food prices for farmers which in turn increase input costs for processors, retailers etc.) and food prices for consumers. In April 2023 food price inflation hit 19%¹⁷, the highest rate for over 40 years (since 1977). Agricultural cost inflation has just begun to fall, after unprecedented growth in costs in 2022¹⁸.

¹⁷ ONS, April 2023

¹⁸ AF Aginflation Index Spring 2023 | The AF Group | Save Time & Money, 2023



This creates real uncertainty both on output values and profitability which cannot be simply extrapolated from or compared to previous years' figures. Given the very large swings in prices in 2022-'23, two farmers growing the same crop with the same yield are likely to have produced very different gross margins based simply on when they purchased major inputs such as fertiliser or sold their crop.

For example:

	Nix	Actual figures September 2022		Nix
2022 crop year decisions	Pocketbook 2021	Farmer A crop sold 30.09.22, all inputs bought in advance at 2021 prices	Farmer B crop sold ahead on 30.09.21, fertilisers bought spring 2022 prices	Pocketbook 2021
Value of output at average 8.7t/ha	1,305	2,649	1,753	2,108
Variable costs £/ha	490	490	1,158	908
Gross margin £/ha	815	2,159	595	1,200
Index of Gross Margin 2021 = 100	100	265	73	147

In the table above, Farmer A who bought their inputs (particularly fertiliser and fuel) in autumn 2021 but who did not sell any of their wheat until October 2022 made a gross margin more than 3 times as high as Farmer B who sold the crop early but only bought fertilisers as they were needed.

The same impacts can be seen depending on energy costs businesses were paying (e.g. gas spiked by 900%, electricity by up to 700%). These have major impacts on farming and food businesses, who are high energy users, depending in many cases solely on when they entered into contracts during 2020-'23 (2020 saw some of the lowest costs in over 40 years and 2023 the highest contract costs).

The result is that it is currently impossible to draw robust conclusions on economic trends for the industry at sectoral level for 2020-'23, both due to the disruptions seen in the supply chain and the fact that the largest changes in costs and prices happened in the last 18 months and are not yet reflected in published company accounts or official government reports.

The data below has therefore been calculated using official government sources, which whilst now dated in terms of current values, is validated and reliable. This means most data is for 2019 - 2021.

Value to the Economy - GVA and Turnover

GVA has been calculated by looking at regional employment (ONS 2021) and GVA per job (from DEFRA Agriculture in the UK 2020 - based on 2019 data) and then using this to arrive at local GVA for the food chain. This turnover estimate is then used to calculate the GVA figure for each part of the chain (based on the average GVA / £1 turnover for food production, retail and catering parts of the food chain - from DEFRA Agriculture in the UK).

The UK Food Valley food chain had average annual output over the period 2019-21 estimated at:

- **£10.7 billion** of turnover in agriculture and food processing and distribution, generating a contribution to the economy of £4 billion;
- **£3.9 billion** of turnover in food retail and catering, generating £1.1 billion for the economy;
- To give a total food chain with sales of £14.6 billion and contributing £5.1 billion to the economy.

In Greater Lincolnshire 73% of the value added in the food chain is in production, processing and distribution of food and only 27% in food retail and catering. In contrast, at UK level only 45% of the value added is in production, processing and distribution. The much higher % share for production, processing and distribution in the UK Food Valley is due to the concentration of food production in the region and a lower share of UK population to support food retail and catering demand.

Part of the Food Chain	GVA £m	Turnover £m
Agriculture	845	2,285
Food processing, distribution and inputs to the supply chain	3,118	8,427
Total Food production and distribution to 'factory gate'	3,963	10,712
Food retail	603	2,567
Catering	492	1,312
Total 'consumer facing' part of the chain	1,095	3,879

Value of Sub-Sectors

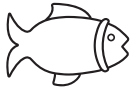


Greater Lincolnshire
Agriculture

Product	Turnover £m		Trend 2016-'21
	2016	2021	
Cereals	229	379	+66%
OSR, protein crops, sugar beet, other industrial crops & forage crops	141	148	+5%
Veg, salad, plants, flowers and fruit	526	673	+28%
Potatoes	74	70	-5%
Other crops inc. seeds	47	69	+47%
Total Crops	1,017	1,338	+32%
Beef and Lamb	43	52	+21%
Pork	57	75	+32%
Poultry meat	367	478	+30%
Milk	14	20	+43%
Eggs	28	38	+36%
Other livestock products	4	4	0%
Total Livestock Products	563	710	+26%
Other agricultural activities	258	237	-9%
Total Agricultural Output Value £m	1,838	2,285	+24%

The UK Food Valley agriculture sector is predominantly focused on crop production with 59% of its agricultural output in crops and 41% in livestock. The crop sector is also seeing faster growth in the value of output, up by 32% from 2016-'21. The particularly strong growth seen in cereals is due mainly to increased prices rather than

volumes of production, with this in turn increasing the value of pork and poultry meat which rose to compensate for increased feed costs. The increase in value of horticultural products, in contrast was driven mainly by increased production volumes.



Greater Lincolnshire Fish Processing Sector

The UK Food Valley in Greater Lincolnshire has a small fishing fleet, but this is much smaller than the fish processing sector. In 2019 the UK Food Valley fishing sector caught 4,100 tonnes of fish, valued at £8.8m (UK Sea Fisheries Annual Report). Grimsby is the Northern Hemisphere's 2nd largest fish processing cluster, with over 5,900 direct jobs in seafood processing, rising to over 10,000 including the supply chain. With 60% of UK processed fish sales the Grimsby cluster is estimated to sell over £2billion of fish products per annum.

Whilst the UK Food Valley does not yet have a large fish production sector, it is now beginning to see investment in aquaculture, with a warm water prawn farm in South Lincolnshire receiving planning

permission in autumn 2022, and a proposed on land salmon farm in Grimsby proposed in 2023 (still subject to planning permission).

The UK Food Valley food processing sector is diverse, with particular strengths in meat processing, fish processing and fresh produce, which collectively account for 70% of food processing employment. All three of these sub-sectors are more concentrated in Lincolnshire than in the industry across the UK. In contrast the percentage of the food processing workforce employed in highly processed foods is lower than for the UK as a whole, which is well aligned with the Food Valley's focus on naturally good for you foods (one of the Food Valley's 3 core themes).

Food Processing (ONS BRES 2021 Date and Seafish (2022) for seafood sector)

Sub-Sector	Employment	
	Employees	% of total
Meat Processing	7,155	28%
Fish Processing	5,900	23%
Vegetables and fresh produce	4,570	19%
Other processed foods	7,550	30%
Total for food processing	25,175	-

Asset Value

There is no reliable published data at regional and local level for the value of the agriculture or food chain assets and liabilities. The UK Food Valley has over 6,500 companies (farms, food processors, marketing, distribution and input suppliers the data is not available in any one source). The data below has therefore been estimated based on the main assets owned by the agricultural sector, using data which is available for major assets, such as farmland area, d. farmland values and investment in machinery and

fixed equipment, from which averages for borrowing in the industry have been deducte. Data for food processing, distribution and supply chain infrastructure is not readily available in any published form. ONS publish data on food chain productivity which shows that 4% of food processors expenditure is typically spent on capital¹⁹. With the industry having a total annual spend of circa £110 billion, this means it invests just over £4.3billion per annum.

£million			
Agriculture - 550,000 hectares (cost data from Nix Farm Management Pocketbook 2023)			
Farmland - @ an average of £25,700/ha (spring 2023)	14,135		
Fixed equipment and buildings @ £2,500/ha	1,375		
'Tenants Capital' in machinery, working capital, livestock @ £2,2845/ha	1,565	17,075	
Borrowings estimated at 5.1% (Defra (2022), Agriculture in the UK 2021)		873	
Estimated Net Assets UK Food Valley Agriculture			16,202

Investment and Growth in Agrifood

The UK Food Valley in Greater Lincolnshire is seeing substantial investment in its agrifood industry, including new productive capacity and investment in sustainability (e.g. renewable energy, water and waste); investment in automation, robotics and digitalisation; acquisitions by external investors; and, investment in R&D and skills capacity.

Commercial Investment

Commercial investment is being driven by local businesses who are investing to grow or upgrade systems, national and international investors who are coming to the UK Food Valley to expand, create new production facilities or acquire local businesses.

The UK Food Valley has tracked 130 investments of more than £1m since 2016, broken down as:

- 112 projects, with the investment value published for 79 of these, which have been completed at a cost of £1,560m.
- 20 acquisitions with the purchase price available for 12 of these, worth £730m.



£5.6bn

Est. over £5.6 billion invested
2016 - 2022

40%

of FDI inquiries are
in the food chain

Total investment tracked is thus £2.3billion, with a further £700m estimated for those where costs or prices have not been disclosed, creating over 7,000 jobs. Given that costs are only known for about 60% of the total investments, it is estimated that the actual investment made in larger agrifood projects since 2016 is over £3billion. In addition, the pipeline of future major projects currently stands at over £1billion, with these projects due to complete in 2023-'25 subject to planning.

Recent reports show that:

- 1 40% of total FDI inquiries into the Greater Lincolnshire area are in the food chain (Greater Lincolnshire LEP and Lincolnshire County Council inward investment team)
- 2 A November 2022 report for the County Councils Network showed that Lincolnshire attracted the 6th highest number of inward investments of any county over the period 2018-'21, with 36 tracked projects. Lincolnshire was the only county in the top 10 in which the food chain was the leading sector for investments.

In addition to these investments, which are predominantly in the post farm gate supply chain or as major new turnkey agricultural expansions, the agricultural industry undertakes many smaller investment projects in machinery, buildings and fixed infrastructure. With 7.6% of UK agriculture by value (2021) this is estimated to be worth (based on fixed capital investment from Agriculture in the UK):

- 1 £162m per year in machinery and £85m per year on buildings, a total of £247m per year.

- 2 Since 2016, the UK Food Valley agricultural sector is thus estimated to have made routine investments of circa £1.5billion.

The Food and Drink Federation reported that in 2022 the UK food manufacturing sector invested £4.3billion (a 8% rise on 2021).²⁹ With a 5.7% share of UK food and drink manufacturing, the UK Food Valley share is estimated at £244m for 2022, or circa £1.2bn since 2016 (based on investment rising during this period), it is estimated that £1billion of investments have been made by food companies in the UK Food Valley from 2016-2022 in routine upgrading and replacement of machinery and equipment.

²⁰ Our Industry at a Glance, Food & Drink Federation, 2022

R&D and Skills Infrastructure

As well as commercial investment, the UK Food Valley has invested in its skills and R&D asset base to increase the supply of new talent in the industry and to increase research capacity. In total over £80m has been invested since 2016 to expand capacity, including:

- The South Lincolnshire Food Enterprise Zone (FEZ), FEZ Hub building, Centre of Excellence for Food Manufacturing, all in Holbeach.
- The Risholme Campus of the University of Lincoln including the Barclays Eagle Farm Lab;
- The Centre for Food and Fresh Produce Logistics at Boston College.
- Bishop Burton's new Showground Campus; the Lincolnshire Institute of Technology.

These new developments have supported a rapid expansion of applied R&D and innovation, with the University of Lincoln now the largest recipient of Innovate UK funding for agrifood tech. Since 2016 over 115 new projects have been funded, worth over £87m (all partner costs).

Total Investment

Since 2016, total investment in the industry is estimated at:

£3bn

Large investments in new projects and acquisitions

£1bn

Routine investment by food processors

£1.5bn

Routine investment by agriculture

£0.1bn

Investment in new R&D capacity

Sustainability metrics

There are no reliable regional level sustainability metrics for the agrifood industry and, even at national level, the data is poor. The UK Food Valley has begun to research energy use in the food chain, including the use of renewables and the first results from this will be available later in 2023.

Anecdotal evidence shows a big increase in renewable investment, with solar, AD and small scale wind power being a feature of multiple businesses in the agrifood industry. Key estimated metrics for the UK Food Valley are:

- **Agricultural fuel** - 550khectares at 50-250 litres fuel/ha dependent on crop and land use (Nix Pocketbook) = circa 68mlitres/year
- **Road transport for agriculture and food distribution** - circa 5,000 trucks to move agricultural and food products at 42,300litres /year (80,000miles) = 210mlitres/year
- **Cool chain** - 60 to 80 kWh/m³/yr., GLLEP has over 0.5million m³ of cold store = 30 million kWh+
- **Glasshouses** - 125 hectares (spring 2023) with a heat demand of 1-1½ MW/ha = 156 MW

Whilst these figures appear large, it has to be remembered that globally circa 30% of all GHG emissions are produced by the food chain and UK high tech production, of the type promoted in the UK Food Valley, is amongst the most efficient in the World.

If the UK seeks to reduce its domestic footprint through energy efficiency or changes to new fuels and power sources this is positive, but if it simply exports the production of food then in most cases emissions rise. For example, in the broader horticulture sector, a report by Swinn (2017) calculated that a UK produced premium cut flower bouquet had only one tenth of the carbon footprint of one imported from Kenya.

The UK Food Valley is being proactive on addressing these issues including:

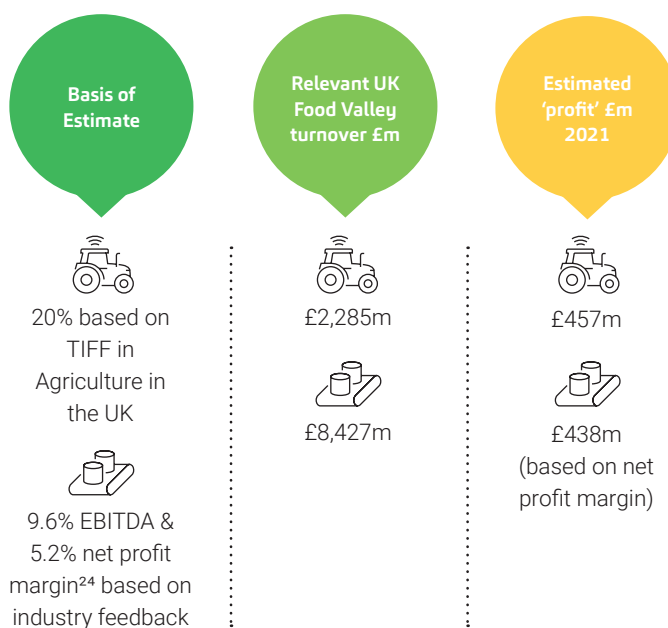
- Reports²² show there were 30 farm based AD plants in April 2022 in the UK Food Valley, with a further 8 approved but not yet constructed. With an average capacity of 3MW, this suggests there is currently circa 90MW of installed on farm AD capacity in the UK Food Valley, with further development likely to grow this to over 110MW.
- Recent changes in energy costs are leading to plans to co-locate agricultural production with AD plants, such as greenhouses or fish farms, which can utilise the low grade heat produced if supplying electricity to the grid. Dyson Farms, near Boston, have already developed a greenhouse for strawberries which is co-located with an AD plant which provides both heat and CO2 to the greenhouse.
- Solar deployment is being seen on farms but is also focused on solar panels on food processing sites and cold stores with major businesses and local investment funds prioritising these schemes. Given the rise in energy costs, payback on commercial solar schemes, assuming all power generated is used on site, is now typically under 5 years.
- Road fuel transition is a key issue for the UK Food Valleys industry with the Greater Lincolnshire Food Board promoting the transition to alternative fuels, such as green hydrogen and/or EV. The progress it is possible to make on this agenda will depend on political decisions, as industry cannot afford to invest before the national infrastructure is in place to support the use of new fuel sources.
- The UK Food Valley is co-located with the Energy Estuary on the Humber which is at the heart of the World's largest offshore wind farm development in the North Sea, as well as the Humber Decarbonisation Plan.
- Carbon Capture Use and Storage (CCUS) is a developing agenda, and the Humber is proposing a major project, Zero Carbon Humber²³, to develop a CO2 pipeline to collect carbon emissions from the industrial cluster on the South Bank of the Humber for storage under the North Sea (utilising old oil and gas field infrastructure) or for use in industrial production. Work is beginning to explore the potential to use this CO2 for agriculture (e.g. to enrich greenhouses) or in food processing.

Profit and Loss Accounts

These are very hard to estimate, as noted at the start of this section because of the major disruption to costs and revenues from 2020 and particularly after February 2022 (due to the war in Ukraine).

The best estimates are:

-  Agriculture
-  Food Processing & Distribution





22 Biogas Map | Anaerobic Digestion (biogas-info.co.uk)

23 Home - Zero Carbon Humber,

24 Profit Margins for the Food and Beverage Sector (investopedia.com)



Challenges and Recommendations

RED Talk: A Year in Food
Date: 27th January 2022

"We are in danger of going backwards in terms of our own food security".

Daniel Zeichner
Shadow Environment Minister

The first year of Brexit posed new challenges for agriculture, food and farming and exposed existing fragilities in globalised supply chains; many of which are still to be resolved. The Trade and Cooperation Agreement, signed on Christmas Eve 2020, offered food producers some comfort around tariffs and quotas and equivalence of standards for organics and foods with geographically protected status. However, leaving the Single Market fundamentally changed Britain's ability to produce and sell food.

Labour shortages after Brexit have had some of the biggest impacts on British food production. Who can forget 120,000 healthy pigs were culled due to a lack of abattoir workers? The lack of skilled labour has led to a decline in food production levels as farm businesses seek to mitigate their working capital risk against similar shortages in following years.

The year-on-year expansion of the Seasonal Worker Scheme is welcomed across the industry but the full quota of 30,000 workers was not utilised because of problems accessing the scheme.

Some estimates suggest 80,000 migrant workers are needed to help British farming meaning the SWS would need reform, higher quotas and longevity to incentivise British farmers to invest in higher production and higher productivity.

The insecure supply of migrant labour has added impetus to automation as a driver of productivity. British universities such as The University of Lincoln are developing state of the art robotics and automated vehicles to reduce the need for imported labour, but it will take time for new technologies to reach the field and in the interim food producers need government intervention to address the labour crisis.

Additional bureaucratic demands of moving food since Brexit have made it more difficult for businesses trading with the EU. The Food & Drink Federation reported a £2billion drop in sales, equivalent to 27.4%, to the EU in 2020. Some sectors such as shellfish have had a particularly difficult time, but every sector is having difficulties with freight. Groupage, the system where goods from several different companies are grouped together in a single load, has become near impossible with the additional paperwork and costs.

Jobs have been exported to Europe in response to restrictions on the freedom of movement of people and goods. An organics business in Cambridge had to set up warehouses in mainland Europe and move most of the work there to circumvent issues of exporting into the EU. In the pig industry, the lack of labour in the UK means carcasses are now being exported for processing in Europe. Smoothing trade barriers to encourage businesses to keep their operations in Britain must be seen as a priority for levelling up rural areas. Farms and food businesses are an important source of employment, training and opportunity for young people in rural locations and without them we risk further isolation and deprivation in these communities.

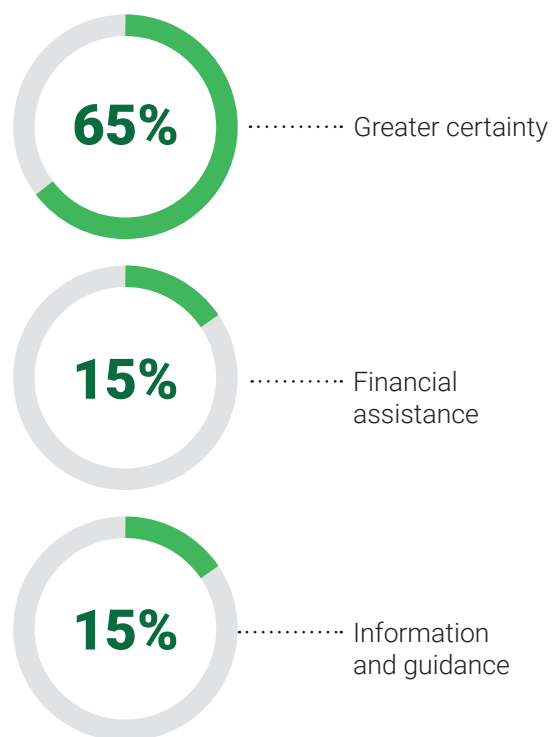
Moving from the Basic Payment Scheme to payments for public goods is widely supported in principle. In practice the transition needs to be carefully managed; payments are being phased out while businesses are not able to plan replacement income streams from ELMS. Smaller and tenanted farms may struggle to access the schemes. Without careful management, the transition in agricultural support may hinder the move towards more sustainable farming. By fundamentally changing the economics of farm businesses they will have less scope to make environmental improvements. You cannot go green when you are in the red.

New trade deals are bringing new opportunities to trade with the rest of world. However, there are potential threats from opening the British food market to trading partners who are not bound by equivalence of standards and farm with economies of scale which are beyond the reach of British farms.

The 2020 Food Security Report was welcomed by industry but needs a clear target for domestic production. Rural Policy Group advocates 70% self-sufficiency. Businesses need absolute clarity around food strategy to give them confidence to plan three to five years ahead rather than year by year. Without certainty there will be a market for their produce, businesses cannot plan capital investments in the technologies which will drive productivity and more competitive pricing. While Britain is likely to become more food insecure without a clear food strategy supporting UK producers, it will certainly become more nutrition insecure.

Higher costs of labour and lower production levels will lead to food price inflation leaving people able to eat, but they will not necessarily be eating foods conducive to good health. The connection between food and health alone should put farming at the forefront of British politics. As Covid demonstrated, “your health is your wealth”.

The Poll: What support does your business need to prosper post Brexit?



Key recommendations:

- 1** Review the accessibility of labour through the Seasonal Worker Scheme in consultation with the farmers and food producers who need to use it. More certainty around labour supply will facilitate investment in production levels.
- 2** Invite Britain's food producers to discuss the trade barriers which are forcing them to relocate their operations to Europe in order to stem the outflow of employment, entrepreneurship, skills and wealth creation.



RED TALK:
Creating the Conditions for
Investing in Sustainability

Date: 26th May 2022

“There is a need for a consistent approach to supporting agri food and farming, food price and food security”.

Mark Lumsdon-Taylor
Partner, MHA

The future of food production in the UK will depend on the ability of businesses to invest in sustainability and productivity. To meet those conditions, there needs to be systemic change to improve margins and reduce working capital risk.

Economic stability is needed to restore confidence.

Businesses have been, simultaneously, faced with rising costs and changing patterns in demand. Food businesses have bounced from one international shock to another (Brexit, Covid, war in Ukraine) in rapid succession. This unpredictable environment has led to soaring costs and volatile markets for their produce which make it difficult to plan ahead.

High energy prices, rapidly rising prices for inputs and additional costs to move goods through global supply chains have combined to put pressure on cashflow and erode already slim margins.

The cost-of-living crisis and uncertainty around economic growth is impacting consumer confidence, including around the types of food people are buying. These changes in behaviour are impacting the financials of food and farm businesses. People are buying less beef for example and that also affects the price farmers can achieve for their produce.

Farm funding is changing and participation in the Environmental Land Management Scheme is unlikely to fully replace lost income from the Basic Payment Scheme. While ELMS will encourage investment in the green infrastructure of farms & estates and the delivery of public goods, it does not (directly) support the business of food production and there is no certainty around long-term plans for farm funding. Farmers are price-takers in negotiations and without the buffer of food subsidies, food production is less viable.

Training and guidance targeted to the food industry

is needed to support businesses in interpreting the regulations, commitments, technical information and science associated with going green. To commit to investing in green growth, businesses need to understand what they are investing in and what they need to achieve.

There are various models which could expand the green knowledge base:

- Collaboration and pooling of specialist resource between businesses.
- A government advisory service similar to those delivered in Scotland, Wales and Northern Ireland.
- A clear framework of guidance that can be applied industrywide, such as Accounting for Sustainability (A4S) which was established to guide accountants, auditors and business planners.
- A system of knowledge networks so farmers can influence and access the good work being done by universities. Germany does this well. Universities will help farmers with specific problems, design trials and solve that problem for the wider industry.
- Centralised resource to explain the available financial incentives and make accessing grant funding and tax incentives easier.
- Fully funded farm demonstration network to disseminate good practice.

Advances in automation and innovation.

land and labour constraints mean financial and environmental sustainability must be driven, at least in part, by efficiencies derived from technological solutions. Defra's 2022 Automation in Horticulture Review identified appropriate technologies as critically important to meeting workforce requirements.

The rediscovery of biological and ecological knowledge also has the potential to deliver efficiency, productivity and profitability within the context of sustainable progress. The ability to accurately crop estimate, the ability to accurately understand the interaction between soil health and productivity and its ability to sequester carbon. That knowledge is going to be incredibly important to the productivity and profitability needed to finance green investments and diversify into sustainable activities.

Targeted funding to stimulate investment and change behaviours through the fiscal framework. It is of the utmost importance that the mainstreaming of sustainability in government policy is backed by funding and tax incentives that enable to businesses to participate in green growth.

Key recommendations:

- 1** Consider the long-term plans for farm and land use funding, consult with those who manage the land and set out a clear strategy with guidance for action underpinned by a simplified programme of funding and a harmonised tax regime.
- 2** Deliver information and education to the sector to take them on the green growth journey.



RED TALK:
The Evolving Role of Land
Use in a Sustainable Economy

Date: 26th May 2022

“Any country that does not understand the need to be able to feed itself, at least to a large degree, is putting itself at extreme risk”.

Tim Farron

Liberal Democrat Environment, Food and Rural
Affairs Spokesperson

Food production and caring for the environment work in tandem. To view them as being competitors for acreage is a mistake. Agriculture provides a host of benefits to society and economy: food, biodiversity, green energy, carbon sequestration, landscape and tourism to name a few. There will be none of these if there is nobody farming and unless the transition to ELMs is managed carefully, too many farmers will downsize or exit the industry to reap the rewards of green policies.

Food subsidies are baked into the system and their sudden removal threatens its structural integrity.

Since this RED Talk, Basic Payments have been further reduced and farmers are opting to mothball greenhouses, cut down orchards and sell herds. The price they can achieve for their produce is below the cost of production in some instances and where there is profit, margins are paper thin. As subsidies are removed, we remove the ability of farmers to farm without making a thumping loss. The removal of subsidies needs to be supported with structural change in the food supply chain and a national conversation about the true cost of food.

Farmers want to farm in a way that is good for the environment despite the myriad challenges they face. Positive environmental actions on farm tend to fall into three categories: (1) improving productivity and efficiency to get more out of less (2) protecting and restoring habitats and soils (3) moving towards renewable energy as both producers and consumers. Actions which are good for the environment and good for business.

Underpinning a sustainable UK plc is the means to feed the population as a matter of national security, economic resilience to global shocks and to ensure the environmental credentials of the food we consume. The best way to protect ourselves from economic, political and climate shocks is to produce more of our food ourselves. Advances in sustainable agritech are making it possible to farm more efficiently while caring for the environment. Trading with partners around the world satisfies tastebuds but partners who have differing standards of environmental protections should not be relied on to supply food (incurring unnecessary food miles) we can produce in the UK.

The potential for the development of markets for renewable energies, biofuels and carbon solutions will be heavily dependent on farm businesses embracing them. Farmers – controlling 71% of England’s landmass and more in other areas – could be the most influential group of people in facilitating green growth.

To hit the 2030 target to reach 70% renewables we need to incentivise the rural economy as producers and consumers of clean energy with capital tax incentives, funding and a level of comfort around investment. If more farms, which are already producing wonderful food, can access renewables projects, it will allow those farms to invest in more efficient processes and new machinery to benefit their core business. It creates a virtuous circle of sustainability, productivity, profitability and competitive food prices.

The financial ability of farm businesses to embark on the path of green growth is constrained by high inflation, reductions to farm payments and slender margins. Some renewables projects can be incredibly profitable – installing onsite battery storage can generate a six-figure income – although many farmers are not confident to evidence debt serviceability. This is where grant funding or a preferential or fixed interest rate could encourage uptake of green growth opportunities.

There are other barriers too. To make further progress in renewables farm businesses need faster paybacks and an ability to sell surplus energy. There are so many shed roofs on cattle and sheep farms which could be utilised but with all the challenges farming is facing at the moment it is too difficult for farmers to embark on these projects without a more immediate impact on P&L.

Parts of tax legislation can be quite punitive for green business. For example, renting land to solar could significantly impact the inheritance tax position and succession planning. With many farms in more elderly hands, this needs to be reviewed. Capital taxes also need to catch up to motivate action in the renewable space.

The delivery of public goods, renewables and food production are entwined and synergistic. Sheep grazing under solar panels. Improvements in soil health and water quality driving improvements in yields and land value. Net zero is a net contributor to wider business goals for those in a position to embark on the carbon neutral journey. How we manage the transition to ELMs, how we incentivise entry into new markets for clean energy and carbon services and how we reward farmers for food production will ultimately determine the confidence and ability of agriculture to drive forward the green agenda.

Finally, it is important to recognise the intangible contribution farming and land management provide to the tourism industry. The Lake District has been a World Heritage Site since 2017 and when UNESCO gave the award as much credit was given to the farmers as to the glaciers for the landscape, which is the UK’s biggest tourist destination after London. Tourism in Cumbria is worth £2.2bn annually, this rises to £4bn across all National Parks in England²⁵ and a further £1bn in Wales.²⁶

Key recommendations:

- 1 Embark on a systemic review of agrifood prices to understand the impact of subsidy loss on food supply and food security.
- 2 Give greater respect in all policy decisions to the value of agriculture. Beyond food production, it plays an important role in pharma, life sciences, tourism and clean energy. Land use is the foundation on which many strategically important industries are built.

²⁵ Nationalparksengland.org.uk

²⁶ Beacons.npa.gov.uk, 2023



RED Talk - The Value of Food
Date: 15 September 2022

“Agriculture needs to be recognized as a key industry, key part of our productivity and a key driver of sustainability”.

George Freeman
Minister for Science, Research and Innovation

We need a healthy food agenda, not a cheap food agenda. A healthy food agenda adds economic value to UK plc, improves health and reduces the NHS burden, cares for the countryside and delivers environmental gains. A cheap food agenda outsources production, R&D, jobs and wealth creation to trading partners.

Food is a £127bn industry in the UK with benefits for health and a sustainable economy but resetting the value of food and what that could mean for food prices for the consumer requires a national conversation.

We need to challenge the culture of how food is valued. Since the 1950s we have been incubating a culture of cheap food and society has become more distant from growing and preparing fresh produce. Reconnecting people with food requires education from childhood onwards. Food labelling can also play a role in educating people about the choices they make. As nutritional labelling supports healthy choices, sustainability labelling can encourage an understanding of the connection between food and environment.

People need incomes which allow them to enjoy cooking and eating. Re-establishing our connection to food alone is insufficient to change behaviours. For decades, food prices have steadily fallen as a percentage of income and it has left a legacy of cheap food which is now structurally embedded in the allocation of household finances.

In any conversation about access to food it is important to disaggregate food prices from food poverty. In many cases food prices do not reflect the costs of production or adequately reward the producer. Despite this people are finding themselves unable to afford to eat in ever greater numbers. The Food Foundation reports over 7 million adults live in households which had gone without food.²⁷

When food insecurity comes into play, food value and food price diverge. A single apple costs as much as a packet of biscuits. If you are making difficult decisions about how to feed a family, there is only one choice. This then leads to poor health and greater demand for NHS services.

Part of the solution to how we reward farm businesses fairly and supply affordable food lies in the productivity gains to be had from technology.

When talking about productivity we need to incorporate environmental productivity alongside economic productivity. The advances in science and technology could be transformational but will not deliver improvements overnight, and public sector funding and coordination is needed to guide R&D and encourage uptake.

We also need to redress power imbalances within the food supply chain to provide all parties with a return which covers their cost and incentivises effort. £1 at the farm gate price is estimated to be worth up to £20-£25 retail price. At a time of rising costs and cuts to farm funding, farmers cannot accept the prices offered and are reducing production levels. The irony is that without farming the food supply chain ceases to exist while power lies at the other end.

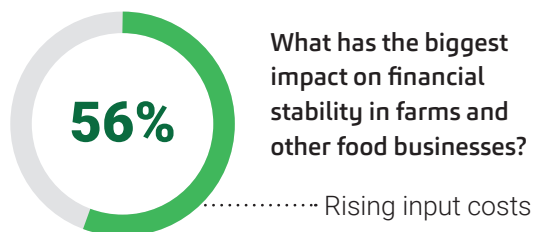
RPG would like to see a voluntary code of practice between all parts of the supply chain to engender transparency, fairness and respect in negotiations. However, a regulatory framework incorporating the Grocery Code Adjudicator and Food Standards Agency are incredibly important to protecting fair value in all aspects of the food system.

The biggest challenge to addressing food value in 2022-2023 is the speed of price inflation. Consumers are paying more in the shops, but the prices offered to the primary producer have not risen sufficiently to cover their additional costs from soaring input prices (labour, energy, fertilizer, feed etc). This is eroding profit margins. Retailers are doing their best to support consumers with extended value ranges and price locks and it may be time to face one simple fact, food prices are too low to maintain supply.

When prices do not reflect the true cost of production, we create problems which undermine the resilience of the food system. Producers need to be profitable to tackle the climate crisis. On rare occasions slender margins open the door to food fraud with potentially disastrous outcomes like BSE. Producers cannot invest in technology and productivity without an income which allows them to do so. Consumers sacrifice nutrition for cheap food.

To achieve growth and resilience and sustainability and improvements in public health, we need to value food and those who produce it more. The conversation to re-evaluate how the whole food system works needs to happen in a planned way, part of which would include a national food strategy and a national land use framework.

The Poll: Food businesses said:



Key recommendations:

- 1** A review and redistribution of value in the food supply chain is needed urgently to improve the return to producers without increasing the cost to consumers.
- 2** Investigate the systemic causes of agrifood price suppression.

These summaries of key issues and recommendations have been developed with expert opinion and insights from speakers representing the triple helix of politics, business and academia.



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Call to Action

Rural Policy Group invites industry, government, policy influencers and those engaged in science, research and innovation to unite in its support of agriculture, food and farming as the engine of green growth and a more equitable society.

RPG sees the following as pre-requisites for achieving the type of profitable and productive industry which can deliver on sustainability and climate goals:

1

Strengthen food security ambitions to make the UK 70% self-sufficient in food production by 2030.

2

Collaboratively work towards fair value and fair dealing in the upstream and downstream food supply chain.

3

Agree a standardised baseline set of metrics against which farms can measure and manage their environmental progress.

4

Incorporate environmental metrics such as biodiversity in land valuations, similar to the role soil quality plays in asset values.

Chairman's Opinion Piece

The current food crisis could be seen as the worst in many years. With the consequences of climate change coinciding with trade restrictions and conflict, years of progress in the battle against hunger and poverty are being rapidly reversed. Since the Paris Agreement from the 2015 United Nations Climate Change Conference (COP 21), stronger mitigation efforts are being embraced worldwide to slow down and stabilise global warming. Many countries have revisited their mitigation plans to strengthen their effectiveness or to find new solutions. The UK has led a number of elements of this, being the first to mandate large companies to report on climate risk.

The agriculture sector contributed £11.2bn to GVA in 2021. Combined with the food sector, the statistic bolsters to £127bn. We as a country spent £240bn on food and drink in 2021 and in 2023 the sector employs over 4m people in 8,300 businesses. However, food producers are in crisis as rising costs meet largely stagnant prices and they are reducing production levels in ever growing numbers.

The Rural Policy Group has recognised this and is vocal about the importance of paying the right amount for food and drink and cascading the margin through the upstream and downstream value chain. We cannot achieve food security without a viable industry of farmers and food producers. We lobby for fair value, and we encourage action amongst businesses to achieve fair value. This report is part of that process.

The valuation of the UK Food Valley in Lincolnshire demonstrates the multitude of economic, environmental and social benefits that emanate from the food chain when its potential is seen and optimised through clear strategy, ambition and hard work.

Relevant to RPG's pursuit of financial and environmental sustainability, is the role of agriculture, together with forestry and other land uses, contributing nearly a quarter of all anthropogenic greenhouse gas emissions (GHGs). Half of this share comes from agricultural emissions, mainly from livestock. Emission reductions from food production have so far received less attention in GHG mitigation policies than those from energy, transport and other industrial sectors. Consequently, emissions from agriculture could become the dominant source of global emissions by mid-century. However, it is worth pointing out that UK farming is already incredibly efficient. The greenhouse gas footprint of UK beef production is half that of the global average whilst the UK dairy industry's greenhouse gas production rates are just 40% of the global average.

Therefore, meeting the Paris Agreement's target to limit global temperature increases to 1.5°C or well below 2°C, will be impossible without agriculture and farming doing its part to tackle climate change. Our take on Taskforce on Climate-related Financial Disclosure, brings this to bear and how it links into the long-term sustainable importance of this sector.

Policies at the international, national and sector levels must work together to avoid simply shifting carbon emissions from one place to another. In low-income countries, all this must be accomplished without threatening food security. Collectively achieved through collaboration with government, the industry and signing up to best practise (such as TCFD Disclosures) and the sharing of data. This can also recognise and reward positive climate action and resilience measures. Finally, a call on policy makers to develop a clear and consistent long-term framework aligned with climate, agricultural, food and forestry science to create a stable and enabling operating environment. This will allow companies to optimise both business and climate performance – everyone wins.



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An aerial photograph of a tractor plowing a field, kicking up a cloud of dust. The field is divided into sections of green crops and brown soil. A large, semi-transparent circular graphic is overlaid on the image, containing the text.

**We're not just
accountants...**

We're landowners.

We're farmers.

We're agriculture,
food and farming experts.

We're accountants.

We're MHA.



Rural Policy Group contributors



Rural Policy Group exists to enhance the financial and environmental sustainability of agriculture, food and farming sector. It is about to embark on the next phase of action to advocate for fair value and food security and we are inviting applications for sponsorship and other forms of partnership from organisations and individuals who share our ambitions for British farming.

Discover more about the work of Rural Policy Group, the APPG on Fair Value in the Food Supply Chain, the Virtual Agri-Food Price Cluster and future initiatives.

