Briefing

Tackling food security by futureproofing the UK's diet

September 2026

green alliance...

Summary

Reducing reliance on resource intensive foods can strengthen UK food security, ease pressure on water and land resources and help the average household manage rising food prices. Our new analysis finds that meat heavy diets increase the exposure of our shopping baskets to supply chain shocks and price volatility because they rely on high land and water use and imported animal feed. In contrast, pulses, such as beans, lentils and peas, are a healthy and affordable alternative protein that can be grown reliably in the UK.

Replacing 17 per cent, equivalent to 100g, of weekly red and processed meat purchases with UK-grown pulses - in line with advice given by the NHS – could save households £95 a year and reduce national water use by the equivalent of 82 per cent of the capacity of the proposed Fens Reservoir.

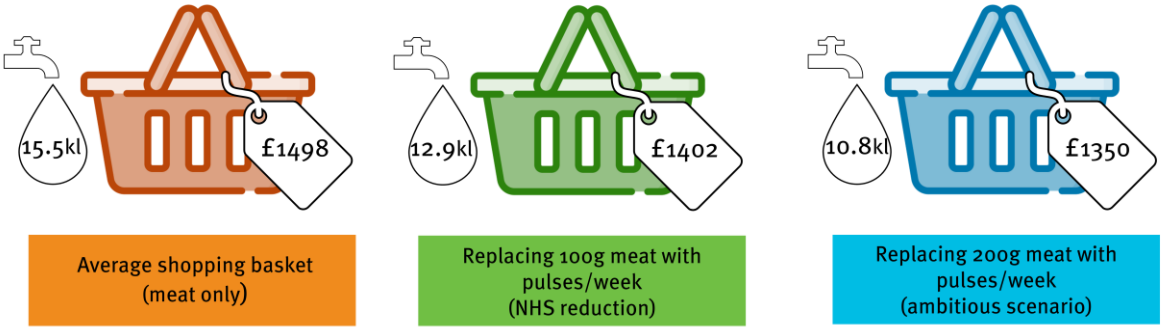
A one third reduction in weekly red and processed meat consumption, equivalent to replacing 200g a week, would increase these benefits. This shift would save enough water equivalent to one and a half times the capacity of the proposed Fens Reservoir, and households £147 annually.

This should be part of the shift towards a more resilient, fairer national food system. Greater resilience requires the government to accelerate actions to cut greenhouse gas emissions and have a clear plan to address global nature loss, reducing the climate and ecosystem driven shocks that threaten long term food security. A Good Food Bill should be introduced to tackle household food insecurity and expand UK production of fruit, vegetables and pulses, alongside targeted measures that make healthy plant-rich diets easier to access for everyone.

The case for action is clear. Food price inflation has risen sharply, with the average shopping basket now costing over 30 per cent more than it did in 2022.[1] The UK government's own national security assessment warns that global ecosystem degradation poses a direct threat to national prosperity and food security.[2] Extreme dry weather and high temperatures from June to August 2026 have seen almost three quarters of England declare a drought.[3] Alongside actions to mitigate the worst impacts of climate change and ecosystem loss, strengthening food security requires far more efficient use of limited resources, such as water and land.

We have assessed four major risks to the average UK shopping basket: rising food prices, increasing water scarcity, livestock disease and climate-related disruption to global food supply chains. In each case, we found that diets high in meat increase the country's exposure to these shocks and price volatility, supporting the case for swapping out some meat for UK-grown pulses.

Annual costs and domestic water use associated with an average family's meat consumption basket: comparing the current average with two scenarios where some meat is substituted for UK-grown pulses



Four food security threats

1. Rising food prices

When food prices rise faster than household incomes, access to a healthy, nutritious diet becomes more difficult for many.[4] This has wider consequences, contributing to poorer health outcomes, which reduce national productivity and increase pressure on public services.[5]

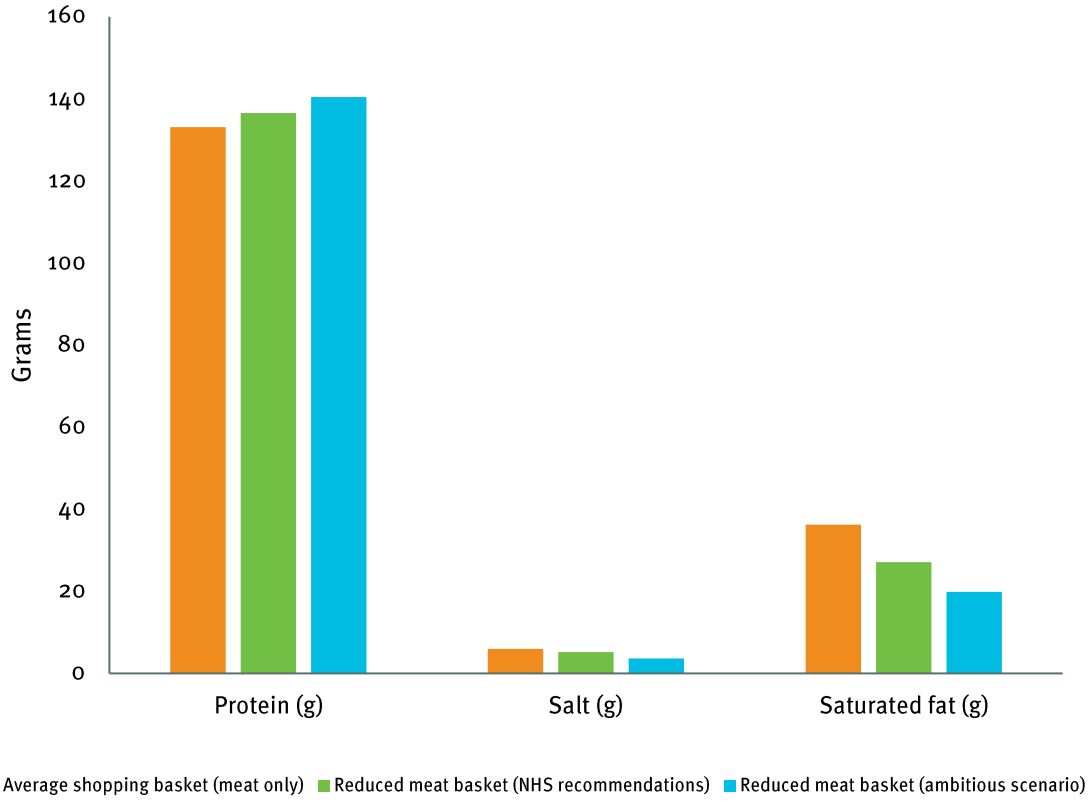
The UK has experienced sharp food price inflation in recent years, with the costs of a typical shopping basket rising by over 30 per cent since 2022.[6]

Public concern is high: 85 per cent of consumers report being worried about food affordability and availability.[7] And the pressures driving these increases are expected to intensify. Climate related impacts on production have contributed to higher prices for products like coffee, chocolate, beef and dairy.[8] Rising energy costs have also fed through the supply chain, from processing to refrigeration and transport, pushing up food prices as margins tighten. The full impact of the 2026 Strait of Hormuz closure on food prices has yet to be seen, as the costs are still working their way through supply chains.[9]

We found that the average UK household shopping basket includes around 15 different meat products each week totalling 821g, although some are bought less frequently and used over several weeks.[10] Replacing just a small share of these items with UK-grown pulses - equivalent to an individual swapping 100g, roughly two pork sausages - could save the average household £95 a year.[11] These changes are in line with recommendations from the National Health Service (NHS), that intake of red and processed meat should not exceed 70g a day, and can be achieved without reducing protein intake or compromising nutrition.[12] In fact, the revised basket contains lower levels of saturated fat and salt with comparable levels of protein.[13]

A more ambitious scenario - in which 200g of meat products are replaced with UK-grown pulses (twice the recommendation from the NHS and equivalent to an individual replacing one beef burger and two pork sausages a week) - would increase average annual savings on food costs to around £147 per household.

Nutritional impact of swapping meat products in an average weekly shopping basket with pulses, in our two scenarios



Diets heavily reliant on meat are likely to become even more exposed to price volatility. Livestock production depends on high quantities of feed and energy, making it vulnerable to price or supply shocks affecting inputs.[14] As climate and resource pressures intensify, the cost of producing meat is likely to become more volatile and expensive.[15]

Plant-based proteins, like pulses, require fewer inputs and cost less to produce. We found that customers get roughly 42g of protein per £1 spent from pulses, versus 28g per £1 spent on beef mince.[16] This means households can gain the same nutritional benefits at lower cost. Diets that include more pulses are both more affordable and more resilient to future food price shocks.

However, while replacing some meat products with lower cost pulses can improve the affordability of the average shopping basket, dietary changes alone cannot resolve food insecurity. For households on the lowest incomes, food insecurity is driven by wider financial pressures and rising living costs, meaning government support will remain essential.

2. Water scarcity

Water is fundamental for food production. As droughts become more frequent and severe, availability of freshwater is emerging as a growing global food security challenge.

Water scarcity has become an immediate and increasingly disruptive risk in the UK. In August 2025, drought was declared across five operational areas in England, with prolonged dry weather lowered reservoir levels.[17] Conditions intensified in summer 2026, when heatwaves across June, July and August 2026 left almost three quarters of England in drought, triggering hosepipe bans for 23 million households and contributing to almost 250 reported wildfires.[18,19] Climate projections indicate these pressures will become more frequent in the coming decades, increasing competition for limited freshwater between households, businesses, energy generation and food production.[20]

Government investment in climate adaptation is now accelerating. Major new reservoirs, including the proposed Fens Reservoir with a capacity of 50 billion litres, are being fast tracked to strengthen long term water security. New reservoirs will be important, but they come at a high cost to consumers. The Fens Reservoir is expected to require £2.2 billion in capital investment and £6 billion in whole life costs, which will be recovered from Anglian Water and Cambridge Water customers over the reservoir's lifetime. We estimate that this could add £11.15 a year to Anglian Water and Cambridge Water annual customer bills.[21] While new water infrastructure is vital, reducing demand for water intensive products and processes will be equally critical to ease pressure on supply.

Agriculture accounts for around seven per cent of the UK's 'blue water' use, ie water taken directly from rivers, lakes and groundwater, for which demand from households, industry and the environment is already high.[22] In a water constrained future, food security will depend on using this limited resource as efficiently as possible.

Meat production is particularly water intensive, especially once the water required to grow livestock feed is considered.[23,24] We found that producing 1kg of pulses in the UK used 95 per cent less blue water than is needed to produce the equivalent weight of beef.[25]

Our analysis shows that, if all UK households replaced just 100g of red and processed meat in their average weekly shopping basket with UK grown pulses – in line with the NHS's meat reduction recommendations– 45 billion litres of freshwater a year would be saved.[26] This is equivalent to 82 per cent of the planned Fens Reservoir's storage capacity, or enough water to fill 375 million bathtubs.

Going further, under a more ambitious scenario in which 200g of meat were replaced, would almost double these water savings, reducing freshwater demand by 81 billion litres annually, enough to more than fill the Fens Reservoir, reaching 147 per cent of its total storage. The water saved could be

used instead to meet the growing demand from people, businesses and nature as climate change increases pressure on UK water resources.

Under both scenarios, more UK grown pulses would need to be produced and consumed to meet the higher demand, creating new opportunities for British farmers.[27]

3. Increasing disease risks

Food security depends on a stable, reliable supply of food for the country's population at affordable prices, but it is threatened by the risk of disease outbreaks which cause mass livestock deaths, supply chain disruptions and price spikes.

Rising temperatures, changing rainfall patterns and more frequent flooding create conditions that favour the spread of pests, pathogens and disease vectors. Livestock are particularly vulnerable, as heat stress can reduce animal health and productivity, while warmer, wetter conditions increase disease transmission.[28] The recent spread of bluetongue virus across England and Wales illustrates this risk, and modelling suggests its range is likely to expand further as temperatures rise.[29]

At the same time, growing global livestock populations to meet global demand and international trade have created more opportunities for zoonotic diseases to emerge and spread across borders.

Several recent cases of livestock diseases have already demonstrated the risks outbreaks pose to UK food security and the cost of food:

- **Avian influenza** has exposed vulnerability to disease shocks, with repeated outbreaks since late 2021 causing significant losses among wild birds and the culling of millions of birds in UK poultry farms.[30] This can rapidly reduce supply, disrupt production and increase price volatility. From January 2021 to January 2026, UK egg prices rose 59 per cent with bird flu cited as a key driver.[31]
- **African swine fever**, a highly contagious disease affecting pigs, has caused major losses across Europe and Asia, with 40 million pigs dying in China costing $100 billion.[32] It has led China to invest heavily in alternative protein sources for human consumption, including plant-based alternatives.[33]

As disease risks in global livestock systems continue to rise, UK food security will depend on reducing exposure to the price spikes and supply shocks they cause.

Building a more resilient food system requires not only better disease prevention and management but also less reliance on high risk livestock production. Diversifying protein sources, including shifting consumption towards more pulses, has been highlighted as a key strategy for preventing future disease-driven disruptions.[34]

4. Climate change disruptions

Climate disruption is now one of the biggest risks to global food systems, with shocks in major producing regions increasingly felt throughout UK supply chains.

The UK imports roughly 40 per cent of its food, much of it from areas already facing rising climate stress.[35] Droughts, floods and heatwaves overseas can cut harvests, disrupt trade and push up prices, meaning climate-related shocks are now routinely felt directly by UK food shoppers.

While adapting UK food production is vital, so are continued efforts to prevent worse impacts of climate change in future. Agriculture is both affected by climate impacts and a major contributor to them. It accounts for 12 per cent of the UK's total greenhouse gas emissions and around 73 per cent of tropical deforestation is linked to agricultural expansion, including land for livestock and feed.[36, 37]

The CCC recommends reducing overall livestock numbers to meet the UK's climate goals. Lower demand for livestock products would reduce pressure on land, helping to both cut UK emissions and overseas deforestation.[38] However, this requires action on both the supply and demand sides. If domestic livestock production declines without a corresponding reduction in consumption, imports could increase, simply shifting environmental impacts overseas rather than reducing them.

The impact on British farmers

A secure food system depends on a thriving farming sector. Domestic food production is a core component of UK food security and resilience, but many farm businesses face significant financial pressures. Livestock farms, particularly, operate on very narrow margins, with beef and upland sheep enterprises frequently generating little or no profit from production alone.[39] Strengthening food security requires policies that support the long term viability of farm businesses and help them to adapt.

Reducing meat consumption in line with dietary and climate recommendations should not have to come at the expense of farmers' incomes. Instead, it is an opportunity to support a more resilient and diverse farming sector.

Our research has found that paying farmers for benefits such as carbon storage, flood mitigation and nature recovery through the Environmental Land Management Scheme (ELM) can provide them with more stable income streams, while delivering public goods.[40] At the same time, there is significant potential to increase domestic production of foods that are currently under-produced in the UK, such as pulses, either for direct human consumption or feeding into the supply chain for alternative protein products.

Expanding horticultural production to better align with healthy eating recommendations would improve food self-sufficiency and create new economic opportunities for farming businesses. Our recent analysis suggests that increasing domestic fruit and vegetable production could add £1.9 billion to the economy.[41]

Building a more resilient UK food system: recommendations

The UK faces growing pressures from climate change, rising food costs and increasing resource constraints. The government has an opportunity to strengthen food security by supporting more diverse and sustainable diets. This should include helping households to access affordable, healthy food, supporting farmers and increasing the domestic production of foods that can help to reduce the country's exposure to price and supply shocks.

To increase resilience in the food system, we recommend the government does the following:

1. Cut UK emissions fast

The most effective way to reduce long term risks to food security is to limit the impacts of climate change. The government should strengthen and accelerate action, including the greenhouse gas emissions reductions set out in its legally binding carbon budgets and by accelerating methane reduction, as it is such a potent greenhouse gas.

2. Set out a clear plan in response to the national security assessment on global biodiversity loss and ecosystem collapse

Having identified ecosystem degradation as a direct threat to UK food security in its own national security assessment, the government should publish a clear action plan outlining how it will respond. This should include measures to address supply chain resilience, the drivers of environmental decline and UK vulnerability to climate and nature-related disruptions.

3. Introduce a Good Food Bill

The government should introduce a Good Food Bill which should:

- **Set a target to reduce household food insecurity by 2035.**[42] Tackling food insecurity should be central to food policy, ensuring everyone has access to affordable, healthy and nutritious food.
- **Commit to increase the proportion of fruit and vegetables grown in Britain by 2040** through a dedicated horticulture strategy.[43] Expanding the domestic horticulture industry, including increasing production of pulses, would strengthen food security by reducing reliance on climate-vulnerable imports, improve access to a variety of nutritious food and create new business opportunities for farmers.

4. Improve transparency on food sales and supply chain risks

The government should introduce mandatory reporting and sales targets for retailers to improve transparency around the healthiness of food sold and level the playing field across retailers. Reporting should begin with progress against targets to reduce sales of high fat, salt and sugar (HFSS) foods, with disclosures later expanded to cover scope three (supply chain) greenhouse gas emissions and the proportion of protein derived from livestock and plant-based sources. This would provide better visibility of how the food system is evolving and help track progress towards a more resilient food supply.

5. Make resilient, plant-rich diets easier to access

The government should support people to eat healthier diets by ensuring everyone can afford fruit, vegetables and pulses. This should include:

- tackling 'food deserts' and improving access to affordable healthy food in underserved communities;
- using public procurement to increase the supply of healthy, sustainable and locally produced food to schools, hospitals and public institutions;
- updating school food standards to ensure a more diverse offering of protein sources on the menu, including beans, pulses and other plant-based foods.

For more information, contact:
Matilda Dunn, policy analyst, Green Alliance

Endnotes

[1] The Food Foundation, 10 June 2026, *The broken plate 2026*
[2] UK Government, January 2026, *Global biodiversity loss, ecosystem collapse and national security: a national security assessment*
[3] Environment Agency and Department for Environment, Food & Rural Affairs, 10 August 2026, 'More areas in England declared in drought after record dry July'
[4] The Food Foundation, 2026, op cit
[5] Ibid
[6] F Hatch, 17 June 2026, 'Food price tracker: June 2026', *The Food Foundation*
[7] C Efemini, 30 April 2026, 'Rising costs forcing 3m UK households to skip meals, Which? report finds', *The Guardian*
[8] ECIU, 22 October 2025, 'Foods hit by extreme weather rising in price four times faster than others'
[9] T Harding, 20 May 2026, 'Strait of Hormuz closure triggers double-digit surge in food inflation', *The National News*

[10] We used the Department for the Environment, Food and Rural Affairs' (Defra's) 'Family food dataset' (2024) to estimate the average weekly quantity (grams per week) consumed for each type of meat. For each meat category, a comparable Tesco own brand product was selected from the Tesco online grocery range, and its nutritional composition and price were calculated on a per gram basis. For example, the 'minced beef' category was represented by Tesco beef mince (20% fat). Where the family food dataset contained multiple similar products, these were combined into broader categories to create a more representative and practical shopping basket. For example, 'beef joints - boned' and 'beef joints - on the bone' were combined into a single 'beef joints' category, while 'pork joints', 'pork chops' and 'pork fillets' were combined into a single 'pork chops' category. This basket was used as our baseline basket.

[11] The baseline basket (containing 592g of red meat per week) was adjusted to reflect the NHS' recommended reductions in red and processed meat (no more than 70g a day). The 'ambitious scenario' reflected adjusting the baseline basket by double the amount under the NHS recommendation scenario. The equivalent quantity of meat reduced was replaced with plant-based protein alternatives, using comparable UK grown pulses from the company Hodmedod's. The cost of the adjusted basket was then compared with the baseline basket (using the price per grams measure), and the weekly difference was annualised (multiplied by 52.14 weeks) and scaled to represent a family of four.

[12] National Health Service (NHS), 2016, The Eatwell Guide

[13] The baseline basket of meat products contained 133.1g of protein, 36.2g of saturated fats and 6.0g of salt. The basket with pulses swapped under the NHS's recommendation contained 136.5g of protein, 27.1g of saturated fat and 5.2g of salt, and the basket with pulses swapped under the ambitious scenario contained 140.4g of protein, 3.6g of salt and 19,8g of saturated fat.

[14] C M Godde et al, 2021, 'Impacts of climate change on the livestock food supply chain; a review of the evidence', *Global food security,* vol 28

[15] M Benoit and A Mottet, 2023, 'Energy scarcity and rising cost: towards a paradigm shift for livestock', *Agricultural systems,* vol 205

[16] We used nutritional and pricing information from Tesco's online grocery store for Tesco beef mince and Tesco Red Kidney Beans. Protein per £1 was calculated by dividing the total grams of protein in each product by its purchase price. Using this method, Tesco Beef Mince provided approximately 28.31 g of protein per £1 (£3.25 for 92 g of protein), while Tesco red kidney beans provided approximately 42.05 g of protein per £1 (£0.39 for 16.4 g of protein) as of July 2026.

[17] N Burnett, 13 August 2025, 'Insight: droughts in England', House of Commons Library

[18] D Gayle, 21 July 2026, 'Thames Water joins hosepipe ban as England and Wales approach drought status', *The Guardian*

[19] Environment Agency, 26 June 2026, 'Dry weather and drought in England: 18 to 26 June 2026'

[20] N Burnett, 13 August 2025, op cit

[21] Cost estimates for the Fens Reservoir were taken from the Ofwat Fens Reservoir case study, which outlines a capital cost of £2.2 billion over ten years, to be accrued equally between Anglian Water and Cambridge Water customers over the lifetime of the reservoir (page 2). This equates to an additional annual cost of £11.15 per customer when spread across Anglian Water's 7 million customers and Cambridge Water's 351,000 customers, assuming an asset lifetime of 100 years (page 27). This

represents an estimated increase in current standing charges of around 3 per cent for Anglian Water customers and 5 per cent for Cambridge Water customers.
[22] T Hess et al, 2015, 'The impact of healthier dietary scenarios on the global blue water scarcity footprint of food consumption in the UK', *Food Policy*, vol 50, pp 1-10
[23] J Poore and T Nemecek, 2018, 'Reducing food's environmental impacts through producers and consumers', *Science*, vol 360, pp 987-992
[24] L Young, 14 July 2026, 'Factory in 'critical situation' as water limited', BBC News: "The 2 Sisters Food Group [chicken] factory used the same amount of water in one day that 2,000 people used in a week"
[25] This percentage difference was calculated using the blue water footprints described in the following endnote, comparing the litres per kg use for beef (121l per kg) and pulses (6.5l per kg).
[26] We estimated the UK domestic blue water footprint of beef, pork and lamb using data from Hess et al, 2015, converting the reported domestic blue water footprint (gm^3/year; table 4) to litres per kg using the corresponding net production estimates (table 8). As Hess et al do not report an estimate the domestic blue water footprint for poultry, we estimated one by applying the same ratio between global and UK blue-water use observed for pork to the global poultry footprint from Mekonnen and Hoekstra, 2012. This approach is supported by comparative water-footprint analyses from Gerbens-Leenes, et al, 2013 showing that poultry and pork have broadly similar global blue-water intensities, reflecting their similar production systems. For pulses, we assumed that blue water use accounted for less than one per cent of the total water footprint, based on findings from the 'Water footprint assessment tool'. We applied this proportion to the total internal water footprint for pulse production reported by WWF, 2008, 'UK water footprint' (appendices, p 28) to estimate total domestic blue water use, and then converted this to litres per kilogram using the UK net production estimates for pulses from Hess et al, 2015. These estimates of domestic blue water use (litres/kg) for each product were applied to the grams in the baseline weekly meat basket, accounting for the proportion of UK consumption supplied by domestic production for each meat type, using data from Defra's Agriculture in the United Kingdom 2024 report. We repeated this for the basket of products with some items swapped for plant-based alternatives using the domestic water footprint of pulses. While currently most pulses are imported to the UK, to ensure comparability, we assumed a scenario in which pulses were produced domestically in the same proportion as meat (domestic vs imported supply).
[27] L Collas, September 2025, briefing, 'Recipe for resilience: the benefits of a thriving plant-based protein sector in the UK', Green Alliance
[28] G Godde et al, 2021, 'Impacts of climate change on the livestock food supply chain; a review of the evidence', *Global food security*, vol 28
[29] A Jones et al, 2019, 'Bluetongue risk under future climates', *Nature climate change*, vol 9, pp 153-157
[30] L Bisdounis, November 2022, 'In focus: bird flu 2022: dealing with the UK's largest ever outbreak', House of Lords Library
[31] E Yurday, 18 February 2026, 'How much eggs cost in supermarkets this week', Clear Score
[32] *Nature*, 1 October 2021, 'The $100-billion toll of a pig endemic in China'
[33] Z Zhu, 7 February 2026, 'Trends and current situation of China's meat sector', *Animal research and one health*
[34] R Espinosa et al., 13 July 2020, 'Infectious disease and meat production', *Environmental and resource economics,* vol 76, pp 1,019-1,044

[35] K Jones, M Dunn and L Collas, 2026, *UK food security in a climate changed world*, Green Alliance
[36] Defra, November 2025, 'Official statistics: agri-climate report 2024'
[37] Hosonuma et al, 2012, 'An assessment of deforestation and forest degradation drivers in developing countries', *Environmental research letters*, vol 7
[38] CCC, 26 February 2025, *The seventh carbon budget*
[39] M Dunn, L Hardy and L Collas, January 2026, *The meat of the matter: what does the trend in lower meat consumption mean for UK livestock farmers?,* Green Alliance
[40] Ibid
[41] K Jones, August 2026, *How the horticulture sector growth plan can support health, security and the economy*, Green Alliance
[42] F Wheeler and C Smith, 25 November 2025, *A good food strategy for the UK*, Green Alliance
[43] Ibid