Briefing

How the government can decarbonise the food and farming industries

November 2026

Summary

Climate change is driving poor harvests, higher food prices and greater risks for UK food security. [1,2] Reducing reliance on fossil fuels in the food and farming industries is central to building a more resilient, productive and affordable food system.

Recognising this, in its Farming Roadmap 2050, the government committed to publish a Food and Farming Decarbonisation Plan explaining how farming and the wider food system will cut emissions during the seventh carbon budget period (2038–42).

The plan must do more than identify potential emissions reductions policies. It should turn climate ambition into a credible programme for delivery, showing who will act, how measures will be funded and how progress will be monitored.

This briefing proposes four tests for the plan, four priority areas for delivery and three guardrails to ensure the transition to low carbon farming is fair and workable. The guardrails should be that: England should become no less self-sufficient in food than it is today; farms should have viable routes to profitability; and decarbonisation should support progress on household food insecurity and diet-related ill health. Importantly, they should guide how emissions are reduced, not whether any action is taken.

Our four tests for the plan are:

1. Is it credible?
2. Does it engage the whole food supply chain?
3. Will it cut greenhouse gas emissions over the seventh carbon budget period?
4. Is it integrated with wider government policy?

Done well, the Food and Farming Decarbonisation Plan can combine ambitious climate action with greater food security, farm profitability and public health.

Introduction

Agriculture and land use will need to change significantly for the UK to meet its climate commitments. Under the seventh carbon budget, emissions from these sectors need to fall by around 39 per cent by 2040 according to the Climate Change Committee (CCC).[3] Many of the changes required, from transforming land use to

replacing farm machinery and infrastructure, will take years to deliver, making action now essential.[4]

Increasing abatement is needed from farming and land use over the next four carbon budget periods (CB) according to the CCC[5]



The case for action goes beyond meeting emissions targets. Climate change has a direct impact on harvests and farm incomes, contributing to pressures on food prices.[6] The government's own national security assessment identifies climate change and nature loss as a major threat to UK food security and therefore to national security.[7]

Decarbonisation can also make farms and food businesses more resilient. Moving away from fossil fuels and towards electrification will reduce reliance on costly inputs and exposure to energy price shocks.[8,9]

Farmers and land managers cannot deliver this transition alone. Food businesses should invest in reducing emissions within their supply chains and operations, while wider private investment should support nature recovery and restore natural carbon sinks like woodland and peatland. The government's role will be to create the conditions for investment and action at the pace and scale required, while ensuring the transition is fair and commands support from farmers and the public.

Four tests for the Food and Farming Decarbonisation Plan

The effectiveness of this plan should be judged not only by the targets it sets, but by whether it answers four fundamental questions:

Test 1

Is the plan credible?

The plan should go beyond identifying where emissions reductions are needed and set out how they will be achieved in practice, including:

- policies, regulations and incentives to drive greenhouse gas emission reductions, and how they will be funded;
- responsibility for delivery, with clear mechanisms for monitoring progress and holding delivery bodies accountable;
- how measures will work alongside existing policies across the agri-food systems, including the Farming Roadmap, Land Use Framework and Environmental Land Management schemes.

Test 2

Does the plan engage the whole food supply chain?

The plan should clearly identify the role of food businesses alongside farmers. It should:

- establish expectations of how retailers, manufacturers, processors and food service companies will cut greenhouse gas emissions within their own operations;
- set out how the costs of the transition will be shared fairly across the supply chain.

Test 3

Will policies cut greenhouse gas emissions over the seventh carbon budget period?

Many measures take years to show full benefits, so the plan should:

- include clear implementation timelines for all major policies;
- prioritise measures with long lead times, including land use change, woodland creation, peatland restoration and machinery replacement.

Test 4

Is it integrated with wider government policy?

The Food and Farming Decarbonisation Plan should not operate only within the Department for Environment, Food and Rural Affairs (Defra). It should:

- show how food and farming decarbonisation aligns with wider industrial, energy and transport policies across government departments;
- set out how different departments will work together to deliver outcomes across the food system.

How should the Food and Farming Decarbonisation Plan meet the seventh carbon budget?

Meeting these tests will require government to turn long term ambition into action across farming, land use, diets and the wider food supply chain, within clear guardrails.

Here are four priority focus areas that would ensure a clear route to delivery.

1. Set out how low emission farming will become standard

The CCC's balanced pathway for achieving greenhouse gas emissions reductions targets in the agricultural sector relies on the widespread adoption of low emission farming measures, reducing sector emissions by around 4MtCO_2e a year by 2040.[10] These include healthier and more productive livestock, better manure and nutrient management, methane-suppressing feed products and a shift away from fossil-fuelled machinery. Many of these can improve farm efficiency and resilience as well as cut emissions, but upfront costs and the risks of adopting new technologies continue to hold back uptake.[11]

Defra's Farming Roadmap aims to make sustainable farming practices standard by 2050. The decarbonisation plan should explain how the government and the food supply chain will support farmers through this transition. England's food self-sufficiency must be maintained while ensuring lower emission farming remains practical and profitable for farmers. It should answer two questions:

a. How will the food supply chain support on-farm transition?

Government schemes, including the Sustainable Farming Incentive, can support on-farm decarbonisation, but public funding and farmers cannot bear the costs alone. Manufacturers, processors and retailers benefit from more resilient, lower emission supply chains and so should invest in the changes on farms. Support could include longer term contracts, premiums for lower emission production and co-investment in infrastructure. Some businesses are already acting, but voluntary initiatives will not secure consistent investment across the sector.

Mandatory reporting of scope 3 emissions could increase pressure on food businesses to tackle emissions in their supply chains, but reporting alone does not guarantee investment.[12] The Food and Farming Decarbonisation Plan should consider how obligations on larger food businesses could translate emissions commitments into on-farm changes.

Methane-suppressing feed products (MSFP) illustrate the challenge. These could reduce livestock methane emissions at scale, but widespread uptake is unlikely without more clarity on how costs should be shared between farmers, processors, retailers, consumers and the government. A clear route to delivery could also give MSFP developers greater certainty over future demand, helping to bring new products to market, subject to robust safety tests, and increase the range of options available to farmers.

b. How will long term changes be planned for?

The plan should provide a clear pathway for replacing fossil-fuelled farm machinery. Decarbonising farm machinery, such as tractors, accounts for 21 per cent of agricultural emissions reductions in the CCC's balanced pathway.[13] But replacing equipment and developing the market for alternatives will take time. The government should provide long term direction now, even while technologies are developed.

Policy should address both supply and demand: supporting the development of suitable low emission machinery while making adoption affordable. The government should assess capital grants, leasing and shared ownership models, and replacement or scrappage incentives, drawing on lessons from the transition to electric vehicles (EVs). The plan does not need to specify every policy now, but it should give farmers and manufacturers confidence about the direction of travel.

Investment in rural electricity networks and charging infrastructure will also be essential. Better energy infrastructure would benefit farms, rural businesses and communities, and support electrification in the sectors the government wants to expand, such as glasshouses.

2. Provide a long term pathway for habitat creation and restoration

Land use change is essential to meet climate targets. The CCC's balanced pathway relies on measures, including woodland creation, peatland restoration, agroforestry and hedgerow expansion, to deliver around 8MtCO_2e of emissions savings by 2040, rising to around 25MtCO_2e by 2050. [14] Given around 70 per cent of UK land is farmed, farmers and land managers are central to bringing about this change.[15]

The Food and Farming Decarbonisation Plan should set out a long term pathway for scaling up habitat creation and restoration alongside food production, while maintaining viable farm businesses. Two important questions to address under this are:

a. How will public funding be directed to ensure the best outcome?

ELMs will be central to supporting farmers to create and restore habitats. The Land Use Framework already guides spatial approaches, balancing carbon sequestration and nature recovery with food production. The plan should build on this by directing funding to deliver land-based emissions reductions over the next 15 years, including:

- Commitment to long term funding: At the 2027 Spending Review, the government should increase the farming budget for England towards the estimated £3.1 billion annually required to meet its environmental goals.[16] While private finance can help to provide this investment over time, it cannot yet be relied upon to meet the current funding need. The plan should give certainty beyond the next Spending Review and direct a greater share of funding towards the Higher Tier and Landscape Recovery schemes under ELM, which offer the greatest environmental returns on investment.[17]
- A clear role for the Landscape Recovery scheme: this scheme targets the large scale woodland creation, peatland restoration and habitat recovery needed to establish future carbon sinks. [18] The priority now is to implement projects

quickly so they are sequestering carbon by the late 2030s to the early 2040s (the seventh carbon budget period). But the plan should also create certainty around a continuing pipeline of ambitious projects so they can make a substantial contribution to meeting climate targets.

b. How will the government increase private investment in nature?

As with on-farm improvements, public funding alone will not achieve the level of habitat restoration at the scale needed. The Landscape Recovery scheme is designed to blend public and private finance, but there is insufficient demand from businesses willing to pay for the environmental outcomes that restoration can provide for them.[19]

The government's own *Growing places* report begins to address this challenge, recognising its own role in creating private demand for nature through regulation, compliance and market frameworks.[20] But it does not provide a long term pathway for scaling up demand. Alongside wider government commitments, including the task-and-finish group on private investment, outlined in the Farming Roadmap, the plan should set out how the government will build sustained private demand for restoring habitats over the next 15 years. While the food supply chain has a clear role in financing on-farm decarbonisation, investment in habitat restoration should be drawn from across the economy, reflecting businesses' impacts on and dependencies on nature.[21]

The plan does not need to prescribe the final design of every mechanism now, but it should explain how the government will build on the emerging nature finance framework to create sustained demand for environmental outcomes. Options include expanding compliance-based approaches; building on Biodiversity Net Gain and the Nature Restoration Fund; and developing beneficiary-pays models for water and flood resilience.[22]

3. Outline a plan for food security

Decarbonising the food system should make the UK more food secure, not less. The government's own national security assessment has identified climate change and biodiversity loss as threats to both food security and national security.[23]

Around 40 per cent of food consumed in the UK is imported, which includes 80 per cent of fruit and 47 per cent of vegetables. Recent analysis estimates that around 18 per cent of the UK's fruit and vegetables comes from countries at moderate to high risk from climate change.[24] While trade is an important source of resilience, and it would not be practical to produce all our food domestically, increasing UK production of foods such as fruit and vegetables could help to diversify supply away from climate-vulnerable areas. The plan should set out how the UK will produce more of the food needed for healthy, lower carbon diets at home, while strengthening the resilience of essential imports.

Food security depends on households having access to sufficient, nutritious food. The plan should therefore support a transition that reduces food insecurity and diet-related ill health while improving access to affordable, healthy diets.

The two questions for the plan to answer in this area are:

a. How will the UK produce more of the food it needs for a resilient, sustainable and healthy food system?

Climate change is already increasing risks to fruit and vegetable supply, while people in the UK would need to eat 86 per cent more fruit and vegetables to meet dietary guidelines.[25] Our previous analysis estimates that meeting more of this demand by increasing domestic production could add £2.3 billion to the economy.[26] Expanding UK horticulture could strengthen food security while supporting healthier diets and creating new markets for British growers.

The government should take a similarly strategic approach to protein. Meat-heavy diets have a high carbon footprint and, as UK meat consumption declines at the population level, investment in research, development and trials could help to expand alternative protein choices and build domestic markets.[27] This would also support food security. The government's own assessment recognises that the UK lacks sufficient land to maintain current diets and livestock production without imports.[28] Meat-heavy diets also increase exposure to volatile input costs and disease risks.[29] Other countries are responding by diversifying protein production: China, for example, has made alternative proteins part of its strategy to strengthen domestic food resilience.[30]

b. How will the resilience of essential food imports be increased?

The UK will continue to rely on imported food, but these supply chains should undermine the ecosystems on which global food production depends by driving deforestation. In 2023, UK consumption was associated to around 29,000 hectares of deforestation worldwide.[31] Therefore, the Food and Farming Decarbonisation Plan should embed the government's commitment to mandatory due diligence for forest risk commodities and set out how the UK will move towards its longer-term ambition of deforestation free supply chains.[32]

4. Include plans to decarbonise the entire food supply chain

Decarbonisation cannot stop at the farm gate. Food manufacturing, processing, transport, refrigeration and retail all rely on energy and infrastructure that must also transition away from fossil fuels for economic resilience.[33] Doing so can cut emissions while reducing the food system's exposure to volatile fossil fuel prices.

The Food and Farming Decarbonisation Plan should identify priority areas for cutting emissions beyond the farm gate, addressing the following questions:

a. What are different government departments' roles?

Some actions needed to decarbonise the wider food system sit outside Defra's remit, including electricity, industrial decarbonisation and freight. However, action to decarbonise the food system as a whole requires co-ordinated policies and clear responsibilities across departments, ensuring that cross-cutting actions do not fall between departmental remits. The plan should establish clear responsibilities for Defra, the Department for Energy Security and Net Zero (DESNZ), the Department for Transport, the Department of Health and Social Care and the Department for Business and Trade.

b. Where can regulation accelerate change in priority areas?

As with agricultural emissions, voluntary action alone is unlikely to achieve the pace of emissions reduction required to meet the seventh carbon budget. Regulation can provide businesses with the certainty to invest while ensuring progress is consistent across the sector. Priorities include:

- electrifying food processing and storage;
- shifting freight to zero emission vehicles and lower carbon modes;
- reducing food waste throughout the supply chain.

Act now to create a more resilient food system

The Food and Farming Decarbonisation Plan is a chance to present a clear route to meet the seventh carbon budget's legal emissions reduction target.

It should establish who will act, how the transition will be financed and which policies must begin now to cut emissions in the late 2030s and early 2040s.

Done well, decarbonisation can strengthen the food system: improving resilience, supporting viable farm businesses, accelerating nature recovery and reducing exposure to volatile fossil fuel prices. Clear guardrails on food security, farm profitability and access to healthy diets will be essential to make the transition fair and durable.

By assigning responsibilities, providing long term investment certainty and acting early in priority areas, government can cut emissions while building a healthier, more resilient food system.

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Endnotes

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