



All-Party Parliamentary Group on
Science and Technology in Agriculture

FEEDING BRITAIN SUSTAINABLY TO 2050

THE
30:50:50
MISSION

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Farming policies ‘must support increase in food production’

Government must boost UK food production by 30% by 2050, MPs say

**MP calls for
‘tyre-screeching
reset’ on
agricultural policy**

**MP calls for major policy reset to help
farmers produce ‘more from less’**

**Norfolk MP George Freeman wants
major ‘reset’ of farm policy**

**SUSTAINABILITY INDEX NEEDED TO
AID ‘MORE FROM LESS’ AGENDA**

**PARLIAMENTARY GROUP
SEEKS VIEWS ON NEW
AGRI-TECH STRATEGY**

MP says UK farming needs urgent reset to stay competitive



The United Kingdom stands at a watershed moment in shaping the future of its food and farming systems

At a time of growing geopolitical uncertainty and climate volatility, domestic food security has become a matter of national strategic importance. The Ukraine/Russia war has highlighted major vulnerabilities and risks of food chain disruption, and these ongoing global concerns add to the need to strengthen our own resilience.

In our *30:50:50 Innovation Agenda for UK Agriculture* (January 2025)¹, we set out a clear and positive vision for Britain's farmers to produce more from less: more food with fewer inputs, lower greenhouse gas emissions, and a smaller environmental footprint. With our good soils, temperate climate, professional farming sector, and world-class agri-science base, the UK is well-placed to increase sustainable production while reducing dependence on imports and contributing to global food security through innovation and international collaboration.

However, the sector currently faces uncertainty about its direction. The UK's agri-environmental and land use policies risk becoming fragmented, with outcomes that may inadvertently reduce or displace food production rather than strengthen it. At the same time, significant public spending – running into hundreds of millions of pounds – is currently subsidising the large-scale conversion of productive farmland into industrial solar installations. While renewable energy is key, this approach risks undermining our capacity to grow food at home. A more balanced strategy would see solar generation prioritised on *new buildings* and non-agricultural land, while increasing agricultural output and resilience.

The former Government's 2013 Agri-Tech Strategy recognised UK agriculture as a vital industry and agri-tech as an important growth sector. The Agri-Tech Catalyst Fund has been particularly successful and impactful. Yet, despite the good intentions behind the other two pillars – Sectoral Innovation Centres and the Agrimetrics Hub – much of the investment ultimately went into academic research with limited connection to boosting industrial productivity. There is now a valuable opportunity to renew that vision, focusing future investment where it can drive measurable gains in applied innovation and farm performance.

At the same time, consumer preferences are shifting profoundly. Surveys indicate that the next generation of consumers will increasingly seek an assurance of more sustainably produced food with a lower environmental footprint. These trends point to the need for new, resilient supply chains and local infrastructure, and investment in greener and healthier food innovations in which the UK could lead globally, rather than risk falling behind.

We are aware of the lively and constructive debate across Parliament on these issues, reflecting strong cross-party interest in strengthening domestic food production, science-based innovation, and fair transition in land use. We need policies that support farmers, and I believe many colleagues share my concern that measures like the proposed family farm tax will be highly damaging to the wider agricultural sector.

Ten months on from the launch of the 30:50:50 vision – to increase UK agricultural output by 30% by 2050 while reducing the sector's environmental footprint by 50% – we have been encouraged by extensive engagement from over a hundred organisations and individuals. There is broad consensus that:

- The clarity and ambition of the 30:50:50 goal resonate strongly across industry and research communities.
- Current domestic policies are not yet aligned to deliver this “more from less” agenda.
- Science, technology, and innovation must be central to a coherent national food strategy.

This report summarises those insights and sets out practical recommendations for government. The *30:50:50 mission* represents a unique opportunity to align government, science, and industry behind a single, long-term ambition – one that strengthens UK food security, restores confidence to our farmers, and ensures Britain leads the world in sustainable agriculture and innovation.

George Freeman.



¹ 30:50:50 Innovation Agenda for UK Agriculture, APPGSTA, January 2025
https://www.appg-agscience.org.uk/_files/ugd/f77b24_53d4be2a7676492b8a98ac8982519f97.pdf



Executive Summary

Overview

The 30:50:50 Innovation Agenda for UK Agriculture sets a bold and unifying mission: to increase UK agricultural output by 30% by 2050 while halving the sector's environmental footprint. This dual objective – producing *more from less* – seeks to address urgent global challenges of food security, climate change and biodiversity loss, while promoting domestic resilience and economic growth.

The 30:50:50 initiative recognises that UK agriculture is at a strategic crossroads. Although Britain enjoys good growing conditions, a professional, well-equipped farming sector and a world-class agri-science base, the industry's development is constrained by fragmented support policies, inconsistent regulation, a failure to transfer new scientific knowledge into practice, and declining productivity growth.

Without radical policy reform, the UK risks further erosion of its food self-sufficiency and growing reliance on imports at a time when geopolitical instability and climate extremes also threaten global food supply chains.

Why change is urgently needed

What if we do nothing? In response to our call for evidence, a modelling study conducted by Science for Sustainable Agriculture found that, over the past 25 years, the UK has lost 771,000 hectares of farmland – a 4.4% decline – contributing to a 12% fall in food self-sufficiency. The analysis also points to declining trends in both domestic agricultural yields and food production over the past 10-15 years, attributed to a range of climate, market and policy-related factors, including challenges of extreme weather, rising farm input prices, loss of key crop protection products, tighter restrictions on input use, and a greater focus on production-limiting farm policy incentives.

Looking ahead, the study warns that full implementation of current government land use and environmental targets – for housing, biodiversity and net zero – could see up to 23% of farmland lost to non-food uses by 2050. Without major policy reform, domestic agricultural output could fall by 32% overall (39% per capita). The conclusion is stark: the UK must improve productivity on its remaining farmland by harnessing the latest advances in agricultural science and innovation – or risk undermining food security, employment and economic growth.

International context

Other nations are already realigning their agricultural policies to combine increased food production with sustainability goals. The 30:50:50 vision mirrors the United States' high-level **USDA Agricultural Innovation Agenda**, which aims to increase farm output by 40% by 2050, while halving US agriculture's environmental footprint. The **EU's Vision for Agriculture and Food**, published earlier this year, marks a decisive shift towards innovation-led productivity growth, recognising the production-limiting risks to EU food security of its Green Deal "Farm to Fork" agenda. Similarly, the recent **FAO-OECD Outlook 2025-34** report forecasts a 14% rise in global food production combined with a 7% emissions reduction over the next decade, driven by uptake of new technologies to reduce emissions and enhance productivity.

By contrast, the UK lacks a coherent long-term vision. Mixed signals from government have left investors, scientists, and farmers uncertain about the country's agricultural future.

The 30:50:50 framework

The 30:50:50 vision proposes a structured, outcomes-focused framework for long-term alignment of food security and environmental objectives. Its four-tiered approach seeks to integrate:

1. **Farm Policy** – Aligning land use and farm support frameworks with sustainable productivity outcomes.
2. **Regulation** – Ensuring proportionate, enabling rules for new agricultural technologies, innovations and inputs.
3. **Research & Innovation** – Strengthening translational research and aligning R&D priorities with industry needs.
4. **Data** – Establishing a trusted infrastructure for real-time farm-level data collection, analysis, and benchmarking.

Stakeholder insights

Feeding into the 30:50:50 initiative, more than 100 organisations and individuals across the agri-food, science, skills, education and technology sectors submitted written evidence or participated in expert roundtables. Their combined input reveals strong support for the 30:50:50 concept as a long-term, strategic vision, and as a necessary alternative to fragmented, short-term policymaking.

Consensus emerged around several key themes:

- The 30:50:50 targets are ambitious but achievable with an enabling policy environment and access to farm-level innovation.
- Current farm policy incentives undermine productivity and innovation, promoting environmental goals at the expense of food production.
- The regulatory environment for farming innovations remains overly cautious and under-resourced, putting UK producers at a competitive disadvantage.
- While realignment of UK and EU food and agriculture rules is expected to bring trade benefits, there are concerns that it risks damaging prospects for UK-based innovation and investment.
- The farm data landscape is fragmented; interoperability of data platforms, harmonisation and governance of data collection methodologies, and farmer trust are critical to progress.
- Translation of research into practice is a major weakness. UK leadership in discovery science is not being transferred effectively into farm-level productivity growth.
- Real-time data and AI-assisted decision-making could transform productivity and sustainability if backed by skills, data, and infrastructure.
- Genetic innovation in both crops and livestock is the primary driver behind agricultural productivity and sustainability gains – policy and research priorities must reflect this.
- Public perception and communication are vital: sustainable intensification of UK agriculture must be reframed as a public good.

Policy recommendations

The 30:50:50 agenda offers an achievable and pragmatic roadmap for the UK to strengthen its domestic food security and regain its agricultural competitiveness while meeting environmental responsibilities. Furthermore, the tools, technologies and knowledge are already available to help our farmers deliver “more from less.” What is required is the political will, and the policy, regulatory and infrastructural alignment to make it happen.

We urge the UK government to:

- Elevate the importance of food security alongside environmental goals by **embedding the 30:50:50 mission, and its associated target for 75% domestic food self-sufficiency by 2050**, as a consistent, cross-departmental reference point across all food, farming and land use policies.
- Commit to publishing a **30:50:50 roadmap** with clear reporting intervals.
- Develop a new **National Farm Data Initiative (NFDI)** to benchmark and monitor progress against the 30:50:50 objectives, with a remit to co-ordinate the collection and integration of farm data; to harmonise data collection and reporting methodologies; and to deliver interoperability between data platforms.
- Stimulate the development and uptake of **real-time data capture and AI-enabled decision support systems** to unlock the performance and efficiency benefits of data collection and analysis, driving productivity improvements at individual farm and national level, embedding good data governance, and transforming data-sharing from a perceived threat into a demonstrable benefit.
- Adopt a more **outcomes-based approach to the delivery of farm support policies to incentivise measurable progress against 30:50:50 objectives**, moving away from the current model based on simply rewarding uptake of particular practices.



- Ensure future land use and farm support policies **protect our most productive farmland for high-yield, efficient food production.**
- Conduct an urgent **root and branch review of the core, applied and translational research landscape for crop science** in the UK to support improved transfer of discovery science into farm-level applications, learning from countries such as the Netherlands and New Zealand which have undertaken similar reviews with resulting benefits for innovation and agricultural productivity.
- Alongside the National Farm Data Initiative, establish a new **national Knowledge Exchange capability**, learning from and building on the ADAS Yield Enhancement Network, to provide a detail-oriented approach to sustainable yield improvement and with an ambition to close a widening yield gap in our major food crops.
- Drive farm-level adoption of productivity-enhancing technologies and innovations through **more effective and efficient tax and grant schemes.**
- **Unlock the full potential of genetics and biotechnology** by prioritising genetic innovation in crops and livestock as the main driver of productivity and sustainability gains in agriculture, for example through early implementation of the animal provisions of the Precision Breeding Act, safeguarding full implementation of the Act for plants and animals in UK-EU realignment talks, and ensuring effective intellectual property protection.
- Commission an urgent **review of current regulation of farming innovations**, led by the new Regulatory Innovation Office using a science-based and risk-benefit approach, to identify potential opportunities to accelerate the route to market for inputs and technologies with potential to reduce emissions and improve productivity in UK agriculture.
- Ensure prospective **UK-EU realignment deal allows for improvements in trade without compromising the UK's regulatory autonomy** in key areas of agricultural innovation.
- **Establish a public communications campaign** to raise awareness of the link between sustainable intensification, food security, environmental improvement and wider societal benefit.



Background

In January 2025, during Agri-Science Week in Parliament, the All-Party Parliamentary Group on Science & Technology in Agriculture (APPGSTA) launched its 30:50:50 Innovation Agenda for UK Agriculture, setting out a bold, long-term vision to boost UK agricultural output by 30% by 2050 (increasing domestic food self-sufficiency from 60% to 75%), while halving farming's environmental footprint.

We argued that the urgent global challenges of food security and affordability are inextricably linked to climate, biodiversity and natural resource imperatives, and that tackling them will require the adoption of clear, long-term, measurable objectives for UK agriculture.

We also pointed to strong evidence, including from the Government's own research² and the National Audit Office³, that the UK's current 'land-sharing' farm policies will reduce or displace domestic food production, increasing our dependence on imports at a time of heightened geopolitical instability, and exporting the climate and biodiversity impacts of our food system.

We proposed a three-step process to deliver against the 30:50:50 agenda:

1. **SEP Index**

Set clear, measurable objectives for Sustainable Efficient Production (SEP) and the delivery of 30:50:50 via a single metric (**SEP Index**) combining land use, GHG emissions, water use and soil quality, expressed per unit of output. Selection of these four parameters was based on a review of international environmental benchmarking initiatives in agriculture, including Field to Market⁴ and the SAI Platform⁵. It also took account of the Institute of Grocery Distribution's eco-labelling recommendations feeding into the UK Government's Food Data Transparency Partnership (FDTTP)⁶.

2. **National Agri-Data Institute**

To oversee the development and delivery of the SEP Index, and to embed data science and sustainability metrics at the heart of a more outcomes-focused policy agenda, establish a new **National Agri-Data Institute**, funded by Defra, for industry-wide sharing, collation and analysis of farm-level data.

3. **Policy alignment**

Evaluate the policy environment in terms of farm support and land use, regulation of farming innovations, and prioritisation of publicly-funded R&D, to determine whether (and what) changes are needed to support effective delivery of the 30:50:50 agenda.

Since launch, the 30:50:50 initiative has attracted widespread industry engagement and positive media coverage for its simplicity in setting a clear, long-term ambition to help UK farmers produce 'more from less', harnessing the latest advances in agricultural science and innovation.

Over the past ten months, the 30:50:50 programme has been taken forward via a series of three expert roundtables at Westminster, hosted by APPGSTA chair George Freeman MP and vice-chair Charlie Dewhurst MP, focusing on:

- the 30:50:50 targets and the SEP Index;
- the farm data landscape;
- the policy environment needed to deliver on the 30:50:50 objectives.

Our evidence-gathering process also included a 30:50:50 presence at the Cereals event, and a two-month call for written evidence focusing on the three roundtable themes outlined above, as well as inviting case studies of sectors/products/technologies already delivering or with the potential to deliver against the 30:50:50 agenda, and/or examples of alternative approaches in other countries which are helping farmers to produce more from less.



² Qualitative impact assessment of land management interventions on Ecosystem Services, Defra <https://randd.defra.gov.uk/ProjectDetails?ProjectId=21327>

³ The Farming and Countryside Programme, National Audit Office, Session 2024-25 <https://www.nao.org.uk/wp-content/uploads/2024/07/farming-and-countryside-programme-summary-1.pdf>

⁴ Field to Market. <https://fieldtomarket.org>

⁵ SAI Platform. <https://saipatform.org>

⁶ Environmental Labelling for the UK Food Industry, IGD, December 2023 https://www.appg-agscience.org.uk/_files/ugd/f77b24_c1ab602514794593a388c81e38c40fc0.pdf

What if we do nothing?

In making (or rejecting) the case for radical policy reform, it is important to take account of the implications of a 'business as usual' scenario.

In response to our call for evidence, the UK-based think-tank Science for Sustainable Agriculture (SSA)⁷ conducted a modelling study to provide these insights.

The resulting report, *UK Food Security – Outlook to 2050*⁸, examined prospects for UK food security to 2050, based on historical land use and agricultural production trends. The analysis was led by former NFU and CLA chief economist Dr Derrick Wilkinson.

Drawing on official UK government data for the past 25 years to establish historical trends in agricultural land use, yields and aggregated food production, the study used AI-assisted economic modelling (Long Short-Term Memory (LSTM) forecasting) to develop forward-looking projections, based on a range of scenarios in terms of land use policies and population growth.

The report found that, over the past 25 years, we have been losing farmland at a significant rate (771,000 hectares, or 4.4%), placing downward pressure on our food production capacity.

Since 2000, while UK agricultural production per hectare has increased by 15% due to yield improvements, the overall rise in aggregated food production was limited to 10% because of the decline in farmland area. As the UK population increased from 59 million to 68 million, this equated to a 5% fall in domestic food production per capita, and a 12% decline in self-sufficiency in primary agricultural products over the period.

Importantly, the 25-year analysis also points to declining trends in both domestic agricultural yields and food production over the past 10-15 years. This can be attributed to a range of climate, market and policy-related factors, including challenges of extreme weather, rising farm input prices, loss of key crop protection products, tighter restrictions on input use, and a greater focus on production-limiting farm policy incentives.



Farmland loss puts UK food security at risk, study warns

SSA report warns 23% of UK farmland could be lost by 2050

UK farmland loss by 2050 threatens national food security levels

A QUARTER OF UK FARMLAND COULD VANISH BY 2050



Looking forward, the analysis predicts that full implementation of Government land use policy targets for housing, renewable energy, habitat restoration, agri-environmental measures and tree planting over the next 25 years will dramatically accelerate the rate of farmland loss and constrain productivity gains, placing even greater strain on the nation's ability to feed itself.

In a worst-case scenario, up to 24% (4 million hectares) of the current Utilised Agricultural Area (UAA) could be at risk, with most of it (80%) arable rather than livestock land.

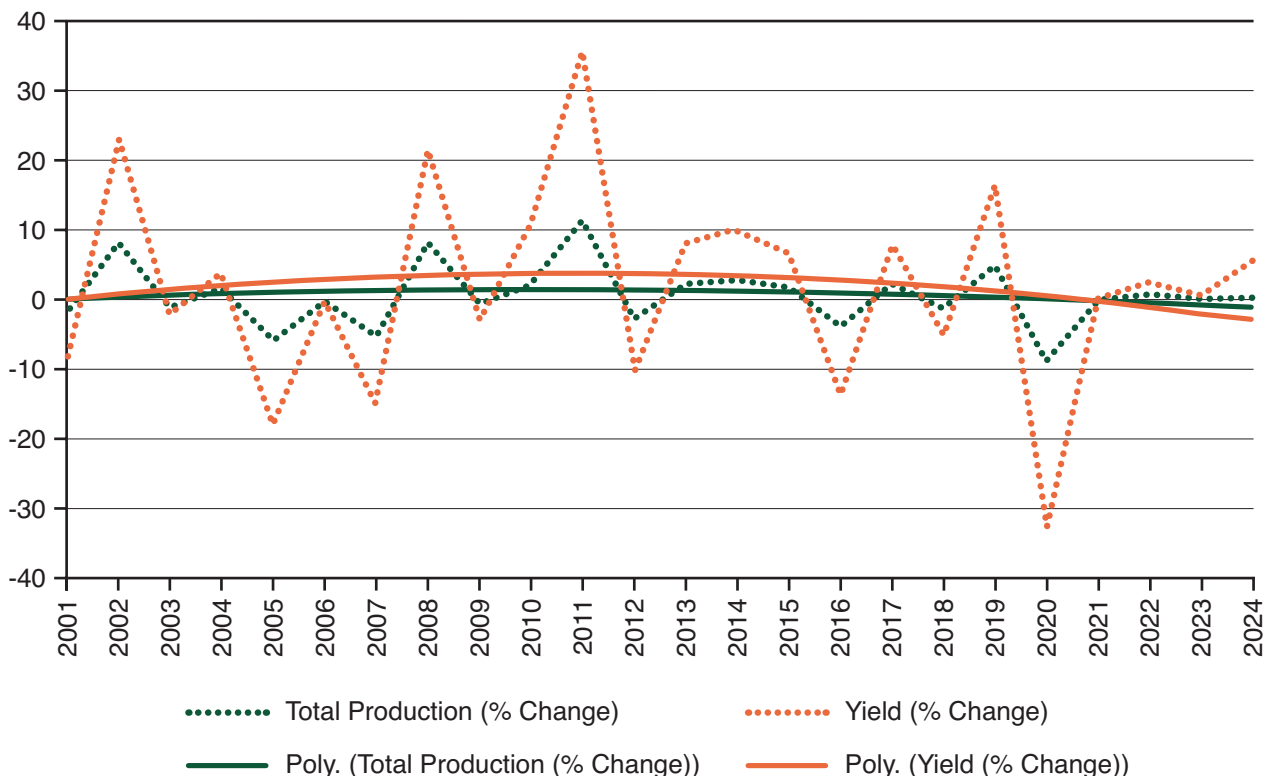
In a high net migration scenario with a UK population of 80 million in 2050, and without radical farming and land use policy change to boost agricultural yields on our more productive farmland, the amount of food produced on UK farms is projected to fall by over 32% (or by 39% per capita).

Expressed on an 'all foods' basis, a 32% reduction in UK primary agricultural production implies that domestic food security levels could fall significantly from 60% at present (in volume terms), dramatically increasing our dependence on food imports.

The overriding conclusion of the report is that if we wish to capture the benefits of environmental measures being integrated into farming and land management policies, while maintaining the transition to net zero through carbon sequestration and renewable energy, it is imperative that we find new and innovative ways to improve agricultural yields on farmland remaining in production to protect domestic food security.

The report suggests that this will require better co-ordination of policies across government departments with responsibilities for agriculture, the environment, biodiversity, climate change mitigation, energy production, food security and trade. It will also require changes to the way government support is allocated so that measures to increase domestic agricultural production sustainably on our most productive farmland are prioritised.

Productivity changes



⁷ Science for Sustainable Agriculture (SSA)
<https://www.scienceforsustainableagriculture.com>

⁸ UK Food Security – Outlook to 2050, Science for Sustainable Agriculture, September 2025
https://www.scienceforsustainableagriculture.com/_files/ugd/f77b24_768efc488c9e441aa763bb088575230a.pdf

The urgent need for a coherent vision

More than 100 organisations and individuals provided input and evidence in response to the 30:50:50 agenda. These represented a wide diversity of sectors and enterprises spanning the length of the UK agri-food chain and associated research, education, training, consultancy and input supply sectors.

The responses we received are best characterised by, on the one hand, near-universal support for the 30:50:50 concept as a long-term, unifying, strategic vision, in contrast to UK agriculture's history of short-term tactical thinking, while on the other a wide spectrum of views as to the priority actions needed to deliver the vision in practice.

Addressing this fragmentation and lack of strategic focus is, arguably, one of UK agriculture's greatest challenges.

In the early 2010s, for example, this All-Party Group was instrumental in calling for action to help bridge a chronic and widening gap in agricultural R&D funding between fundamental research and its translation into practical, on-farm application.

In 2013, the coalition government committed £140m to a new UK Agri-Tech Strategy, framed as a response to Sir John Beddington's Foresight Report on Global Food Security⁹, which urged governments worldwide to adopt policies of sustainable intensification in agriculture through the embrace of new technologies and innovation.

But while the Agri-Tech Strategy represented an important signal of strategic support for UK agriculture as a key sector of the economy, its goals were never properly defined, and when stakeholders were asked for their views on how the money should be invested, the response was a cacophony of fragmented, sectoral interests, with no overall sense of strategic purpose or direction.

This lack of coherence may explain, at least in part, the underwhelming contribution of the Agri-Tech Strategy. Far from boosting farm-level performance, the Strategy has coincided with a slowdown in UK agricultural productivity growth over the past 10-15 years.

It also underlines that the sense of drift and lack of strategic focus for UK agriculture is not new or unique to the current government.

But at a time of heightened geopolitical volatility and uncertainty, there still appears to be no clear ambition to improve our domestic food security.



In marked contrast, governments and international organisations elsewhere appear alert and responsive to the importance of driving agricultural productivity and sustainability gains through the adoption of new technology.

Following the impact of war in Ukraine and unprecedented drought conditions in southern Europe, the EU launched its *Vision for Agriculture and Food*¹⁰ earlier this year. This places renewed emphasis on the role of innovation in boosting agricultural output, marking a clear departure from the regressive Farm to Fork strategy, which was projected to reduce food production in the bloc by up to 19%.

Meanwhile the FAO-OECD's recent *Outlook for Agriculture 2025-34*¹¹ report is equally clear that embracing new technologies to reduce emissions and enhance productivity will play a key role in helping global agriculture to increase food production by a projected 14% over the next decade while reducing emissions by 7%, "*delivering on food security and climate action without dramatically increasing land use*".

Against this background, UK agriculture urgently needs clarity and transparency from the government about its future vision, and what '*food security is national security*' means in practice?

Does it mean producing more of our own food?

Or does it mean easing access to more food imports?

In the context of a prospective realignment of our food and agriculture rules with the EU, it is evident from the input we received that the government's response will affect the investment decisions not only of UK farmers, but also of the research-based companies and organisations whose technologies, innovations and advice are needed to drive future gains in agricultural productivity. In the words of one plant breeder, the UK is at a tipping point.



⁹ Foresight. The Future of Food and Farming, Government Office for Science, 2011

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/288329/11-546-future-of-food-and-farming-report.pdf

¹⁰ Vision for Agriculture and Food, European Commission, February 2025

https://agriculture.ec.europa.eu/overview-vision-agriculture-food/vision-agriculture-and-food_en

¹¹ OECD-FAO Agricultural Outlook 2025-2034, OECD, July 2025

https://www.oecd.org/en/publications/oecd-fao-agricultural-outlook-2025-2034_601276cd-en.html



Stakeholder responses

Call for written evidence

The All-Party Group received extensive written evidence from across the agricultural and scientific community, including professional bodies, research institutes, industry organisations, and independent experts.

Across this diverse stakeholder base, the 30:50:50 ambition – to raise UK food production by 30 per cent by 2050 while cutting farming's environmental footprint by 50 per cent – was widely endorsed as a vital, long-term strategic framework.

Respondents viewed it as a valuable and necessary alternative to fragmented, short-term policymaking, and as a unifying point of reference to align productivity, sustainability and innovation goals.

However, the evidence also revealed deep structural barriers: a lack of policy focus on food production; inconsistent and over-precautionary regulation; under-resourced innovation systems; lack of clear baselines and data coherence; weak translation from research to practice; and insufficient investment in skills, infrastructure, and digital capability.

The 30:50:50 targets

Most witnesses agreed that the targets are ambitious but achievable if the policy and regulatory environment supports coordinated investment and uptake of innovation.

For example, agri-tech consultant **Martin Collison** argued that the production goal is realistic if land use and technology are optimised, pointing to the enormous productivity potential of high-value, intensive systems such as controlled-environment horticulture, aquaculture, and monogastric livestock. He noted that current policy incentives favour low-output, extensive systems, but that with investment in infrastructure and a more enabling policy and fiscal framework, the UK could exceed the 30% goal and potentially reach 50% growth in output by 2050.

The **NFU** acknowledged that the 30:50:50 target provides a useful focal point for joined up policymaking, but cautioned that the targets themselves must be grounded in realistic assumptions. It pointed to other statutory frameworks such as the UK's Carbon Budget, which also anticipates a 50% emissions reduction but only forecasts a 16% increase in crop yields.

SRUC described the targets as “highly ambitious but achievable” if supported by a robust Agricultural Knowledge and Innovation System (AKIS).

Peter Gill pointed to historical yield trends equivalent to 1.7% annual growth, arguing that achieving 1.2% per annum to 2050 is plausible. However, recent stagnation in both wheat and milk yields suggests diminishing marginal returns from current practice and innovation. Gill argued that the 30:50:50 ambition will depend in particular on accelerating adoption of data-driven decision-making and AI.

BASIS, Norwich Research Park (NRP), and SHAKE (Climate Change Programme) each emphasised that the 30:50:50 ambition must be matched by enabling policy, skills, and funding. SHAKE warned that without targeted early-stage investment, agri-tech innovation will remain under-capitalised.



Environmental indicators

Respondents largely endorsed GHG emissions, land use, water use, and soil health as core parameters, while some respondents highlighted the importance of other factors, such as economic resilience, international competitiveness, health and nutrition, and animal welfare.

For example, the **Delivering Sustainable Wheat (DSW)** consortium and the **NFU** made the case for embedding nutritional value in sustainability metrics. DSW demonstrated how its wheat genetic research focused on the development of high-fibre white bread could yield major public-health gains comparable to salt-reduction policy, while the NFU cautioned that accounting for yield measures alone risked ignoring advances in food and nutritional quality.

SEP Index

Views differed on the proposal for a single composite SEP Index.

Most respondents support combining a limited number of easily measurable and repeatable indicators into a single SEP Index metric, given appropriate weightings and sufficient flexibility over time to adapt to new or evolving sustainability challenges.

Accounting for a balance of environmental indicators is also seen as key to avoiding unintended impacts or misleading sustainability claims relating to a single issue, eg GHG emissions.

However, rather than adopting a holistic approach, many favour a sector-by-sector development and application of such an index, in line with product-based requirements for supply chain reporting, and given the varying critical success factors involved, eg combinable crops vs. vegetables vs. livestock.

Such sector-by-sector information could then be combined on a whole farm or national basis to benchmark and monitor progress towards the overall 30:50:50 objective.

Data and Metrics Infrastructure

All stakeholders emphasised that robust, trusted and harmonised data collection mechanisms are essential to measure and validate progress.

The **NFU** described the farm-data landscape as “complex and fast-moving” and endorsed adoption of Farm Data Principles certification to support data governance and farmer trust.

A number of respondents highlighted examples of ongoing data initiatives to baseline and benchmark farm-level performance.

AHDB pointed to its baselining platform for measuring farm-level carbon emissions, and described how platforms like Farmbench and collaborations with Mondra, Soil Association Exchange and the Food Data Transparency Partnership (FDTP) can provide standardised baselines for carbon, water, and nutrient use efficiency.



However, it is not clear how aligned or compatible these datasets and initiatives, or the methodologies involved, are in practice.

Views differed on the APPGSTA proposal to create a new National Agri-Data Institute, with some arguing that efforts to harmonise and centralise the collection of farm-level data should build on, not replicate, existing initiatives.

Nevertheless, this is an issue requiring urgent attention, with transformative potential to deliver against the 30:50:50 agenda. UK agriculture lags behind other countries, and other sectors of the economy, in its ability to harness the power of farm data. It is an area characterised by stalled initiatives and missed opportunities, epitomised by the failure of Agrimetrics, established 10 years ago as part of the UK Agri-Tech Strategy with an ambition to be a pivotal national hub for agri-data.

Niab and consultancy **Supply Chain In-Sites (SCI)** pointed to the urgent need to co-ordinate the collection and validation of agricultural data, and to harmonise methodologies for farm-level data collection and reporting, particularly for issues such as carbon accounting.

There is an equally pressing requirement to ensure inter-operability of data platforms which many stakeholders, including the **Agricultural Engineers Association (AEA)** described as a major barrier to uptake of the precision farming technologies needed to drive improvements in input-use efficiency.

SCI also highlighted the importance of moving towards real-time data capture as the norm, rather than the current focus on lagging performance indicators. According to SCI, this not only provides scope for real-time actionable insights to improve farm-level productivity, but also strengthens veracity and timeliness of supply chain reporting.

By way of illustration, SCI described a recent project trialling real-time data capture among a group of rice farmers in Thailand, using a bespoke smartphone app, which succeeded in reducing GHG emissions by 36% over a 15-month period without reducing crop yields, and with a clear pathway to reaching 50% emissions reduction as the programme is rolled out to more growers.



Policy and Regulatory Environment

Multiple stakeholders pointed to farm policy 'drift' and a lack of focus on food production, alongside fragmented and overlapping policy instruments, and under-resourced regulatory agencies as major barriers to development and uptake of farm-level innovations with the potential to deliver against the 30:50:50 agenda.

The **NFU**, drawing on the Corry Review, described the current farm policy system as “not fit for purpose” to support either nature recovery or economic growth. It called for joined-up governance across R&D, food, land use, energy, and waste and for a “What Works Centre for Farming” to translate research into practice.

Associated British Foods (ABF) and **British Sugar** highlighted a risk that environmental goals, for example in relation to biodiversity and net zero, will continue to dominate the policymaking process without equivalent targets for domestic food production. They welcomed the integration of food production objectives alongside sustainability goals in the 30:50:50 vision, and called for clear food production targets to be embedded in the government's Food Strategy.

CropLife UK characterised current crop protection and biotech regulations inherited from the EU as “overly precautionary, slow, and commercially uncompetitive.” It urged a shift to risk-based regulation, streamlined approvals, and incentives for biopesticides and precision application. CropLife noted that the UK is starting to benefit from its post-Brexit regulatory autonomy through more proportionate and enabling regulation of new technologies such as precision breeding. However, it cautioned that these benefits could be at risk in the context of forthcoming SPS negotiations with the EU if the UK accepts EU rules via full dynamic alignment without a say in setting regulatory policy.

AHDB also welcomed the Genetic Technology (Precision Breeding Act) 2023 but cautioned that benefits will depend on coherent implementation and effectively targeted R&D.

BASIS and **SCI** both called for a coherent national Agri-innovation Strategy, framed around the 30:50:50 objectives, and with the regulatory agility to match progressive competitor nations, moving away from the EU's precautionary approach.



Research, Innovation and Skills

There was universal agreement among stakeholders that translation of research into practice is the weakest link in the UK agri-innovation landscape.

AHDB, SRUC, and BASIS each advocated sustained funding for translational research activity and infrastructure to bridge the hiatus between early-stage laboratory science and farm-level application.

SHAKE presented evidence that targeted, mission-led accelerators can help de-risk innovation towards the 30:50:50 agenda: a number of its ventures – *Glaia*, *SugarOx*, *ResurrectBio*, and *Adamo Foods* – are already demonstrating combined productivity and environmental gains.

BASIS pointed to its 30,000 strong membership of professional advisers within the agricultural and environmental sectors, emphasising the need for high-quality, accredited learning and development programmes to be embedded within publicly funded knowledge exchange schemes.

Seed industry consultant **James Wallace** highlighted an urgent need to align R&D investment more closely with industry needs, and called for a post-war style Knowledge Exchange push, this time tuned to both production and sustainability outcomes. Like BASIS, he also emphasised the role of trusted advisers in both supporting uptake of innovation and as facilitators of data collection and analysis.

Peter Gill predicted that over 90 per cent of on-farm management decisions will be AI-assisted by 2050, calling this “the single greatest opportunity to increase profitability and reduce footprint.” He recommended rapid rollout of AI-based data tools to accelerate productivity improvements, a view also supported by NRP and SCI.

SRUC cited its Dairy Nexus project as a 30:50:50-aligned model to foster knowledge exchange and innovation in the dairy sector, with a focus on boosting productivity and reducing emissions, while its Green Shed initiative is the world’s first circular farming system to use cattle waste to power a shed and grow indoor crops.

Many stakeholders pointed to structural investment gaps which present potential barriers to productivity gains and uptake of innovation, including the lack of capacity for catchment-scale storage of winter rainfall, and poor rural internet connectivity. **BASIS** considered that physical and digital infrastructure should be classified as essential enablers of environmental delivery within national infrastructure planning.

NFU, CropLife, DSW, MAGB, BSPB, Niab and **NRP** all emphasised that continued access to genetic innovation, including both conventional and new precision breeding technologies, will be critical to the successful delivery of a ‘more from less’ agenda. BSPB pointed to an independent study by HFFA research indicating that genetic improvement accounts for two-thirds of recent productivity gains in UK arable crops.

“Without the contribution of improved varieties over the past 20 years, the HFFA study found that UK crop yields would be 19% lower, and 1.8 million hectares of additional land would be needed in other parts of the world to meet our food needs, placing additional pressure on scarce global resources and causing more than 300 million tonnes of additional GHG emissions.” **BSPB** noted.



MAGB added that as agrochemical options shrink, there will be increased reliance on genetic sources of resistance from both conventional and new breeding technologies to support future productivity gains.

James Wallace also highlighted a pressing need to close the yield gap in our major food crops, pointing to the recent closure of ADAS' Yield Enhancement Network (YEN) for cereals and oilseeds as a major loss, since it had demonstrated the potential to deliver significant gains of ~40% above national average yields among participating farmers. He suggested that the decision to close down the YEN programme after 13 years reflected a general lack of policy incentive to focus on productivity gains.

Genetic improvement was also highlighted as a primary driver of productivity and sustainability gains in livestock. Multiple stakeholders highlighted the importance of early implementation of the animal provisions of the Precision Breeding Act to help unlock potential resistance solutions to major disease threats such as Avian Influenza, Foot and Mouth Disease, African Swine Fever and Porcine Respiratory and Reproductive Syndrome (PRRS).

Alongside disease eradication, the **NFU** and **SRUC** also prioritised integration of livestock data as a key driver of productivity improvements and genetic gain. SRUC suggested that its EGENES livestock database, which uses individual animal data to develop national genetic indices, is under-utilised for a range of other metrics such as input use efficiency, land use efficiency and GHG emissions, and could readily be expanded to include other parameters. According to SRUC, a nationally funded genetic improvement network coordinated by EGENES could help accelerate UK genetic gain and deliver the next 20 years of improvement in 10 years.

Meanwhile **MSD Animal Health** emphasised preventative health, vaccination, and digital monitoring as central to improving health and reproductive outcomes, and reducing emissions intensity.

Public Perception and Communication

Public understanding emerged as a critical enabler, with several respondents urging proactive communication linking innovative new technologies and productivity gains with public good, countering perceptions that more intensive forms of production are worse for the environment.

AHDB and **SHAKE** also favoured transparent, consumer-facing reporting of product-based sustainability information to demonstrate progress and build better understanding between farmers, government, and society.



30:50:50 roundtable feedback

Key points summary

Feedback received from more than 70 invited experts at three separate roundtable sessions hosted by the All-Party Group at Westminster between June and September 2025 mirrored and reinforced the messages from the written call for evidence.

The 30:50:50 mission is strongly supported across the sector as a timely vehicle to align long-term agricultural policy, regulation, research investment and innovation with a clear “more from less” ambition.

The following key points emerged from the roundtable discussions:

- **Achievability** – 30:50:50 widely seen as realistic, but contingent on the right policy incentives and access to enabling technologies.
- **Farm-level data focus** – emphasis on baselining and collecting individual farm-level data rather than relying on secondary databases or practice-based models, given huge variability between systems, soils, and rotations.
- **Single SEP Index** – supported in concept, but should be applied at the enterprise level (rather than whole farm), linked to unit of production (eg per tonne, litre), with potential to move toward nutrition-based measures (eg bioavailable calories).
- **Indicator selection** – initial focus should be limited (eg IGD eco-labelling parameters of land use, GHG emissions, water use and soil/water quality) to ensure practicality and avoid excessive complexity.
- **Measurement challenges** – soil carbon, soil/water quality and other metrics all carry technical complexity; consistent, scalable methods are needed.
- **Data verification** – for both domestic and imported food/feed, independent validation and trustworthy data are essential.
- **Existing initiatives** – multiple programmes are already collecting, baselining and benchmarking farm-level data (eg AHDB, FDTP, IGD, Mondra, Soil Association Exchange), but not yet aligned. Focus should be on coordination and interoperability of existing initiatives rather than recreating or duplicating.
- **Government role** – in establishing common methodologies (esp. carbon footprinting), set standards, and drive interoperability (e.g. APIs) between data platforms.
- **Urgency required** – UK agriculture is falling behind other countries in using farm-level data effectively (“exporters to the UK are doing a better job”).
- **Past failures** – Agrimetrics and Defra’s Sustainable Intensification Research Platform farm data software are cited as examples where government-funded data initiatives failed to deliver meaningful value or adoption.
- **Farmer trust and incentives** – data sharing must be incentivised, with a stronger focus on added value, and reducing the admin burden.
- **Real-time insights** – highlighted as more valuable than lagging historical data, enabling timely interventions on livestock health, soil moisture, and pest/disease threats.





- **Standardisation** – aligning and simplifying data requirements across farm assurance, supply chain, RPA etc. will be key to delivering the mindset shift needed for farmer buy-in.
- **Tax and support schemes** do not currently encourage long-term investment in innovation or infrastructure.
- **Stop-start nature of grants and schemes**, and uncertainty around IHT rules, are undermining confidence.
- Government should establish **sector-specific food production targets** alongside environmental and biodiversity commitments.
- **Defra's competing priorities** dilute the productivity focus; the 30:50:50 agenda must be recognised as **cross-departmental**.
- **Genetic improvement** in crops and livestock seen as central to delivering productivity gains and reducing input use.
- **Precision breeding is critical** – urgent implementation of the **animal provisions of the Precision Breeding Act** and exemption from UK-EU reset deal are required to maintain UK leadership.
- Current **R&D grant funding models are risk-averse and bureaucratic** (especially Innovate UK); new accelerator models may help to bridge the “missing middle” between lab and farm.
- Maintain funding for **discovery science** while strengthening translational research and IP protection (eg US Bayh-Dole-style framework).
- Learning from countries with faster productivity growth (Netherlands, NZ, Canada, USA) is essential – including better coordination and alignment of priorities across government, academia, and industry.
- UK adoption of **precision agriculture and robotics** is patchy due to cost, skills shortages, and lack of data platform interoperability.
- Grants for equipment need **stability and predictability** to encourage uptake and manufacturer engagement.
- Engage and support **agronomists and advisers** as critical intermediaries for farmer uptake of innovation and behaviour change.
- Need to ensure reliable rural **mobile connectivity** to enable digital agriculture and real-time data capture.
- An **over-crowded and fragmented applied crop science landscape** needs urgent review and restructuring to improve translation of discovery science into practical application, learning from the experiences of countries such as the Netherlands and New Zealand.
- **Horticulture sector** highlighted as underfunded and neglected in R&D terms yet strategically vital to reduce import reliance, with relatively high output value per land area, and associated healthy eating benefits.
- Strong warning that if domestic production declines, the result will be **exported environmental impact** and loss of jobs in a UK agrifood sector contributing £150bn to the economy and employing 4.2 million people, 13% of the workforce.



Summary of recommendations

The urgency of food security and sustainability challenges means that clear, long-term objectives are needed to help Britain's farmers produce 'more from less', harnessing the latest advances in agricultural science, technology and innovation.

There is strong support for the 30:50:50 mission as a coherent, strategic framework to mobilise government, science and industry behind an ambition to produce more of our own food with a reduced environmental footprint.

Our recommendations for Government action are summarised below, set against the step-by-step approach outlined in our original 30:50:50 vision document.

They point to an urgent need to re-frame the current farm policy, regulatory and R&D agenda.

Original 30:50:50 vision document	Recommendations for Government action
STEP 1 In response to the Government's stated policy aim for the country to produce more of its own food, we proposed a target of 75% self-sufficiency by 2050 (up from current ~60%). Accounting for population growth, this would require a 30% increase in agricultural output, which combined with a 50% reduction in environmental impact forms the 30:50:50 agenda. Combined within a single metric, the Sustainable Efficient Production Index, we proposed the following four parameters, expressed per unit of output, to measure environmental impact. GREENHOUSE GAS EMISSIONS WATER USE LAND USE SOIL/WATER QUALITY	- Elevate the importance of food security alongside environmental goals by embedding the 30:50:50 mission, and its associated target for 75% domestic food self-sufficiency by 2050, as a consistent, cross-departmental reference point across all food, farming and land use policies. - Commit to publishing a 30:50:50 roadmap with clear reporting intervals. - Establish a public communications campaign, to demonstrate the link between sustainable intensification, food security, environmental improvement and societal benefit.
STEP 2 We proposed the development of a consistent, evidence-based approach to the collection and integration of farm-level data to provide a single metric for consumers, policy-makers and investors. We suggested the establishment of a new National Agri-Data Institute, funded by Defra, as a centralised system for industry-wide sharing, collation and analysis of the vast silos of farm-level data – on-farm and in research settings – which are not currently being properly integrated or exploited.	- Develop a new National Farm Data Initiative (NFDI) to benchmark and monitor progress against the 30:50:50 objectives, with a remit to co-ordinate the collection and integration of farm data; to harmonise data collection and reporting methodologies; and to deliver interoperability between data platforms. - Stimulate the development and uptake of real-time data capture and AI-enabled decision support systems to unlock the performance and efficiency benefits of data collection and analysis, driving productivity improvements at individual farm and national level, and transforming data-sharing from a perceived threat into a demonstrable benefit.

Original 30:50:50 vision document	Recommendations for Government action
STEP 3 We highlighted a need to ensure consistency and co-ordination of policy across three key pillars – farm support and land use, research and development, and regulation of farming innovations – to deliver against the 30:50:50 targets.	
FARM SUPPORT AND LAND USE We pointed to the strong scientific evidence which indicates that a ‘land-sparing’ approach, which involves harnessing farming innovations to optimise high-yield production on as small a land area as possible, so leaving more room for intact nature and carbon sequestration, offers a more efficient and cost-effective basis for farm policy to deliver on food, climate and biodiversity goals. UK-based research indicates that a three compartment approach to land-sparing policy, with an allocation of land of about 60% high yield farming, 25% natural habitat and 15% low intensity farming, would provide the optimum balance for the country as a whole.	• Adopt a more outcomes-based approach to the delivery of farm support policies to incentivise measurable progress against 30:50:50 objectives, moving away from the current model based on simply rewarding uptake of particular practices. • Ensure future land use and farm support policies protect our most productive farmland for high-yield, efficient food production thereby maximising opportunities for enhancing biodiversity on less productive land.
RESEARCH & DEVELOPMENT We suggested that while the UK leads the world in terms of high-impact academic publications in agriculture-related sciences, we continue to lag behind competitors in domestic agricultural productivity growth. Is our agricultural science policy and R&D framework fit for purpose? Is the transmission from laboratory to field working effectively for the UK, and focused on the right priorities? Can we learn lessons from other countries?	• Conduct an urgent root and branch review of the core, applied and translational research landscape for crop science in the UK to support imported transfer of discovery science into farm-level applications, learning from countries such as the Netherlands and New Zealand which have undertaken similar reviews with resulting benefits for innovation and agricultural productivity. • Alongside the National Farm Data Initiative, establish a new national Knowledge Exchange capability, learning from and building on the ADAS Yield Enhancement Network, to provide a detail-oriented approach to sustainable yield improvement and with an ambition to close a widening yield gap in our major food crops. • Drive farm-level adoption of productivity-enhancing technologies and innovations through more effective and efficient tax and grant schemes.

Original 30:50:50 vision document	Recommendations for Government action
REGULATION OF FARMING INNOVATIONS We suggested that over-precautionary and under-resourced regulatory processes are preventing or delaying access to farming innovations in many areas, including the registration and approval of new crop varieties, crop protection products, GMO imports, novel feeds and feed additives.	• Unlock the full potential of genetics and biotechnology by prioritising genetic innovation in crops and livestock as the main driver of productivity and sustainability gains in agriculture, for example through early implementation of the animal provisions of the Precision Breeding Act, safeguarding full implementation of the Act for plants and animals in UK-EU realignment talks, and ensuring effective intellectual property protection. • Commission an urgent review of current regulation of farming innovations, led by the new Regulatory Innovation Office using a science-based and risk-benefit approach, to identify potential opportunities to accelerate the route to market for inputs and technologies with potential to reduce emissions and improve productivity in UK agriculture. • Ensure a prospective UK-EU realignment deal allows for improvements in trade without compromising the UK's regulatory autonomy in key areas of agricultural innovation.



APPGSTA stakeholders

The activities of the All-Party Parliamentary Group on Science & Technology in Agriculture are supported by a number of food, farming and research organisations:

 The Agricultural Industries Confederation is the leading trade association in the UK agri-supply industry. www.agindustries.org.uk	 The Agricultural Biotechnology Council is the umbrella group for the agricultural biotechnology industry in the UK. www.abccropscience.co.uk	 The British Society of Plant Breeders is the representative organisation for the UK plant breeding industry. www.bspb.co.uk	 CropLife UK is the voice of the UK plant science industry. www.croplife.uk
 The National Farmers' Union represents farmers and growers in England and Wales. www.nfuonline.com	 UK Flour Millers is the representative organisation for the UK flour milling industry. www.ukflourmillers.org	 The Maltsters' Association of Great Britain is the representative body for the UK malting industry. www.ukmalt.com	 Niab is a leading UK centre of plant research, crop evaluation, agronomy and knowledge transfer. www.niab.com

30:50:50 partners

The 30:50:50 programme has been kindly supported by:





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