Good Food Institute Europe

Briefing | Policy and regulatory progress on protein diversification since the National Food Strategy

Background

In 2021, the National Food Strategy (NFS) recommended several measures to accelerate protein diversification through the development of plant-based foods, cultivated meat and fermentation-made foods. The Johnson Government's Food Strategy (GFS) took on board the NFS' advice to support alternative proteins, with commitments to innovation funding and regulatory reform.

As the Labour Government begins the process of developing a new food strategy, this briefing assesses the progress made to date in implementing the NFS recommendations and the GFS commitments on protein diversification. The field of alternative proteins has developed significantly in the five years since the NFS process began and the rapid pace of scientific, commercial, policy and regulatory change means that it would make little sense for the new government to reheat the contents of the NFS and/or GFS in this space. Instead, **Defra should work across government to ensure the food strategy represents a new chapter in the UK's leadership on protein diversification.** With targetted actions, this will create new opportunities for producers, drive growth in a highly innovative part of the food sector, and help citizens shift towards eating healthier and more sustainable diets.

Protein diversification is crucial for addressing dietary ill-health, reaching climate and nature targets, and delivering innovation-driven economic growth.

Read more in Appendix 1

"Along with the environmental and other benefits, growing the alternative protein sector will benefit the UK economy. If the UK produces all of the new alternative protein it consumes, the industry could create an additional 10,000 good manufacturing jobs. In addition, 6,500 jobs would be retained in farming to produce inputs for the industry. Without a strong domestic alternative protein sector, these factory and farming jobs could be lost to other countries."

National Food Strategy, *The Plan* (2021)

"The alternative protein sector provides another opportunity for growth, complementing traditional livestock sectors. The government will keep the UK at the front of this growing and innovative sector..."

Government Food Strategy (2022)

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Summary of National Food Strategy and Government Food Strategy measures on alternative proteins

We have included both the independent review and the subsequent white paper in the scope of our analysis, particularly since the Defra Secretary of State has indicated that he is "interested in building on the work that Henry Dimbleby started". The table below summarises the NFS and GFS' plans for alternative proteins, with a more detailed overview provided in Appendix 2 & 3.

National Food Strategy	
Invest £50 million in an alternative proteins "cluster"	The UK Government should invest £50 million in creating an innovation cluster for alternative protein entrepreneurs and scientists.
Invest £75 million in grants for alternative protein startups	£15 million per year should be invested in alternative protein startups from a new £500 million UKRI Challenge Fund.
Mandatory reporting on protein sales for large food companies	A statutory duty should be placed on all food companies with more than 250 employees - such as retailers and food service businesses - obliging them to publish an annual report on a range of health and environmental metrics, including sales of protein by type and origin (meat, dairy, fish, plant, or alternative protein).

Government Food Strategy	
Public investment in alternative protein research and innovation	Support alternative protein innovation via UKRI's £120 million investment in research across the food system. *(No specific amount given.)*
Creating new guidance for market authorisation of alternative proteins	Dedicated guidance materials aimed at supporting alternative protein businesses that want to submit new products for regulatory approval with the Food Standards Agency.
Review the novel food regulations	Reform the UK's novel food regulatory framework following EU Exit - reaffirming an existing commitment made in the *Benefits of Brexit* white paper.

Broadly, the interventions targeted at alternative proteins in both the NFS and GFS fall into two categories: **public investment in research and innovation**, and **modernising how alternative proteins are regulated**. The exception is the NFS's call for mandatory reporting on protein sales. We have included this here since, if implemented, mandatory reporting could be an important lever for encouraging large food businesses to expand their offerings of plant-based foods.

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Progress on public investment in alternative protein R&I proposals in GFS & NFS

What was said

Both the NFS and GFS focused on the importance of public investment in alternative protein research and innovation. While the GFS committed an undefined portion of £120 million UKRI food systems innovation funding to alternative proteins, the NFS was more specific in its recommendations—calling for a total of £125 million in public investment in alternative protein R&I, split into two interventions, across five years.

First, the NFS proposed creating a £50 million alternative proteins "cluster" with shared facilities for entrepreneurs and scientists. The idea was a "physical centre", designed to capture the productivity benefits of congregating firms and institutions in a narrow geographic location, although beyond this the NFS was not specific. Funding would come through a Spending Review submission coordinated by Defra together with the (then-) Department for Business, Energy and Industrial Strategy and UKRI. The NFS forecast that investing in the cluster would generate £350 million in economic benefits.

Second, the NFS recommended £75 million in grants to alternative protein startups, spread over five years, as part of a new £500 million UKRI food systems challenge fund. This funding was proposed to address concerns that the UK was failing to sufficiently support SMEs in the space, with the NFS pointing to countries like Israel and Singapore as outriders.

What has happened

Following the NFS and GFS, two UKRI councils - the BBSRC and Innovate UK - committed to fund at least £20 million in alternative protein R&I as part of a joint partnership. This has been the backbone of a significant uptick in UK public investment in alternative proteins since 2022.

Most strikingly, **four major research centres have been established since 2023, backed by more than £60 million in public and philanthropic funding**. Together, the centres provide a significant boost to R&I capacity and coordination, covering plant-based, fermentation and cultivated meat. They are a crucial step forward and the primary reason that the UK is now the second largest public funder of alternative protein R&I in Europe, after Denmark. The centres are committed to collaboration to avoid duplicative R&I activity and are developing domestic and international partnerships across the private and public sectors. Their work will continue until at least the end of the decade.

Cellular Agriculture Manufacturing Hub

- Lead institution: University of Bath
- Funder: EPSRC
- Investment: £12.3 million
- Funded period: 2023–2030

National Alternative Protein Innovation Centre

- Lead institutions: University of Leeds, James Hutton Institute, Imperial College London,
- Funders: BBSRC & Innovate UK
- Investment: £16 million
- Funded period: 2024–2029

Microbial Food Hub

- Lead institution: Imperial College London
- Funder: BBSRC
- Investment: £12.6 million
- Funded period: 2024–2029

Bezos Centre for Sustainable Proteins

- Lead institution: Imperial College London
- Funders: Bezos Earth Fund
- Investment: £23.6 million*

*Funded value originally in $ (£0.79)

Sources: UKRI GTR; Imperial.ac.uk

For now, it would be a stretch to call these centres (individually or combined) a cluster in any conventional sense (e.g. Michael Porter's description). None of them have significant affordable open-access infrastructure for public and private sector R&I (e.g. 100s litres of food-grade capacity for piloting and validating and optimising cultivated meat bioprocesses), nor the presence of a large number of alternative protein businesses or others in related fields in close geographic proximity. The CARMA Hub at Bath is exploring options for research infrastructure while the Bezos Centre for Sustainable Proteins plans to create a lab-scale facility at Imperial College's West London site. This is promising, since the White City Innovation District has a strong focus on engineering biology and is home to cultivated meat companies Multus and Meatly. However, it would need further investment and more firms to locate themselves nearby to truly create an alternative protein cluster as the NFS envisaged.

Nevertheless, the foundation of these four research centres is a major step forward, tapping into latent scientific capabilities throughout the country and providing much-needed coordination of the UK's alternative protein R&I ecosystem.

There has also been good progress on public investment in startups. We analysed data from UKRI's Gateway to Research and Dimensions.ai to identify that, since 2020, **£26 million of public investment has been made in R&I grants to alternative protein businesses.** The vast majority of these investments were in startups. Due to data limitations, the actual amount invested could be slightly higher or lower, but any difference would be relatively marginal. Examples include innovation funding for Adamo Foods (biomass fermentation/mycoprotein), Rootiful (plant-based meat), Roslin Technologies (cultivated meat). Overall, therefore, we

estimate that roughly one-third of the NFS's ambition for alternative protein startup grants has been achieved to date.

£8 million of funding has also been allocated to collaborative R&I between private sector and third sector research institutions (e.g. NIAB, John Innes Centre), as well as £43 million in university-led research (which in some cases includes industry partnerships). Academic-led R&I is often focused on more pre-competitive discovery science and open-access research, which can help to ensure greater equitability and transparency as we diversify our protein supply.

Overall, therefore, between 2020-mid-2024, UK public investment in alternative proteins was £75 million - **60% of the total recommended by the National Food Strategy.**

> Explore GFI Europe's **State of the European Alternative Protein Research Ecosystem** to learn more.

Progress on modernising the regulatory environment for alternative proteins

What was said

While the NFS did not make any specific regulatory recommendations for alternative proteins, the GFS restated the Johnson Government's commitment to reviewing the novel food regulations[1], first made in the Benefits of Brexit white paper in January 2022. EU Exit gave the UK the chance to revise how it regulates novel foods, which could lead to a more efficient path to market while upholding rigorous food safety standards.

The GFS also committed Defra to working alongside the FSA to develop new guidance and information for companies developing alternative proteins. This was a welcome idea since an absence of detailed, specific guidance increases the risk of businesses submitting incomplete or poor-quality dossiers to the FSA as part of a market authorisation application, burdening both the regulator and companies.

What has happened

Progress has been made, albeit slowly. The FSA commissioned an independent review of its novel food framework, which reported in 2023. Subsequently, the regulator broadened its

[1] Cultivated meat products and some plant-based and fermentation products will need to gain market authorisation via the Food Standards Ageny before being sold in the UK. Most will be regulated as novel foods, although there are other avenues such as the food additives process.

focus to its nine regulated product areas (which include but are not limited to novel foods). Following a public consultation, the FSA has confirmed it will legislate for two changes across its regulated product regimes in early 2025. These reforms will:

- Remove the need for three regulated product categories (not novel foods) to undergo re-authorisation every 10 years. In principle, this should indirectly benefit alternative protein applicants by freeing up FSA risk assessors.
- Remove the need for a statutory instrument to authorise a regulated product - replacing this with a digital register. This will improve public transparency and benefit applicants and consumers, since the statutory instrument process can add 3-6 months before a product can be placed on the market.

The FSA has also been exploring other means to increase efficiencies in its market authorisation processes, including expanding its use of risk assessment opinions from trusted regulators abroad. In a recent update, the FSA said that initial testing of this approach had cut some risk assessment decision timelines from over six months to six weeks. However, little public information has been provided on how this is working in practice and it is yet to be standardised (e.g. akin to the MHRA's International Recognition Procedure).

Additionally, the FSA has secured £1.6 million of funding from the Department for Science, Innovation and Technology to create a new regulatory sandbox for cultivated meat. This will enable the regulator and businesses to work closely to address sector-wide questions and information gaps that could inhibit the path to market.

While it is welcome to see the progress the FSA is making, the speed at which this has happened poses issues for entrepreneurs working to diversify our protein supply. Novel foods are an especially important area for the regulator to focus on since the space is dominated by startups who are dependent on tight cash runways, but often need market authorisation to generate revenue. There are further steps that the FSA could take to increase the efficiency and transparency of how it authorises new alternative proteins and other regulated products, including enabling and formalising substantive pre-submission consultations with applicants and providing avenues to amend or refine safety dossiers submitted without restarting the authorisation process.

The UK also continues to lack a modern approach to safe, limited taste testing for novel foods. The Netherlands has proved that a protocol for public taste tests of cultivated meat is workable within the scope of the novel food regulations, provided strict controls are put in place to guarantee consumer protection. This is, therefore, an area ripe for reform, helping startups demonstrate progress, attract private investment, and validate their products.

There has also been only limited progress in developing new guidance materials for alternative proteins. The Food Standards Agency has published a specific webpage for cultivated meat, but this only links to generic advice, such as EFSA's novel foods guidance. The FSA's cultivated meat regulatory sandbox has committed to publishing more detailed guidance, but it is difficult to see this being published until late 2025 at the earliest and it will only be relevant for cultivated meat producers. Meanwhile, the FSA has no specific regulatory guidance for other alternative proteins, such as precision fermentation-made ingredients and proteins, fungi-based proteins and novel plant proteins.

Mandatory reporting on protein sales for large food companies

What was said

The NFS proposed that any food business with more than 250 employees must report on a range of health and sustainability metrics. These would be mandatory, imposed via statutory duty, and include an annual breakdown of protein sales by different types. The NFS looked to gender pay gap reporting as an example of how mandatory rather than voluntary reporting can drive corporate behaviour change. For protein sales, the proposal aimed to create greater transparency and pressure on major food businesses to diversify their protein sources away from animal-based products.

What has happened

The Government Food Strategy led to the creation of the Food Data Transparency Partnership (FDTP). It brings together government, industry, civil society and experts to evaluate data reporting methodologies for health and sustainability across the agri-food sector. The FDTP's Health Working Group did consider reporting protein sales as a percentage of overall sales volume as an option for large food businesses, but this was not taken forward as one of the agreed health metrics, since protein is not considered a nutrient of concern among the UK population. The FDTP's work has since been interrupted by the change in government.

Meanwhile, voluntary reporting on the percentage of protein sales from animals vs. plants has failed to become widespread. The Food Foundation has found that only 6 of 36 (17%) major food companies voluntarily report on this metric. Only Lidl GB reports a breakdown of protein sales while also setting a target for plant and animal protein sales.

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Summary: the food strategy must be a new chapter in the UK's leadership on protein diversification

Since the National Food Strategy process began in 2020, the field of alternative proteins has changed significantly. The UK is currently considering its first applications for cultivated meat and precision fermentation products, while the market for plant-based foods has been maturing following growth and readjustment.

Our analysis shows that the UK Government and public research funders have built **solid foundations for the enabling environment required for a successful alternative protein ecosystem** that contributes to economic growth, mitigating climate change, improving public health and boosting domestic food production. The expansion of public investment in alternative protein R&I funding is a notable highlight and we can reasonably say that the NFS's concerns that the UK was falling behind other countries is largely no longer the case, particularly in Europe.

That should not mean a pause in ambition. Instead, **the new government must use the forthcoming national food strategy as a springboard to develop the policy, regulatory, scientific and commercial landscape needed to accelerate protein diversification over the remainder of the decade**. There are significant questions that policymakers and public funders have yet to intervene on, including infrastructure for alternative proteins and developing domestic supply chains that create opportunities for British farmers and growers. As the food strategy process progresses, GFI Europe will be developing proposals to ensure the UK retains its status as a leader in alternative proteins.

Appendix 1 - How protein diversification can deliver on the UK's goals for growth, health and climate

The National Food Strategy presented a strong case for the benefits of protein diversification. Below, we provide a summary of new evidence produced since the NFS was published in 2021.

Innovation-driven growth

- Alternative proteins are a high-growth potential area of the food system. For example, cultivated meat and fermentation-made foods are leveraging engineering biology - one of the Government's five priority technology areas - to produce sustainable and nutritious options for consumers. See more in the National Vision for Engineering Biology.
- Estimates indicate that, with regulatory reforms and sufficient public investment, the UK alternative protein industry could add £6.8 billion annually to the economy and create 25,000 jobs by 2035.
- The UK has a thriving alternative protein startup ecosystem. For example, the UK currently ranks third for the number of cultivated meat startups globallly.

Delivering environmental benefits

- A 2024 systematic review by researchers at the London School of Tropical Hygiene and Medicine evaluated 34 studies comparing 135 plant-based meat and mycoprotein products with 53 animal-based equivalents. Overall, they found that a significant majority of plant-based products had a carbon, water and land use footprint at least 70% smaller than the animal-based equivalent.
- A 2023 peer-reviewed life cycle assessment – based on data from cultivated meat companies – found that, when produced with renewable electricity, cultivated meat could cut the climate impact by up to 92%, reduce air pollution by up to 94%, and use up to 90% less land compared with farming animals.
- A peer-reviewed life-cycle assessment of Onego Bio's precision fermentation albumin (the major protein in egg whites), compared to conventional eggs, causes 35-55% lower emissions and 87-89% less land use.
- Analysis from Green Alliance demonstrates that even with modest levels of protein diversification, an area of land the size of Wales and Yorkshire combined (21% of the UK's total farm area) could be released by 2050 – which could be used by farmers to support the UK's climate and nature goals by producing more extensively.

Improving public health

- Replacing some animal-based products, particularly red and processed meats, with plant-based foods can deliver sustainable nutrition.

- A recent systematic review shows that many plant-based meat products are a good source of protein, a source of fibre and lower in saturated fat than conventional animal-based foods. Research from the Food Foundation demonstrates similar findings.
- While research is in its infancy, there is growing evidence that consuming plant-based meat can reduce dietary ill-health. For example, a systematic review of seven randomised control trials has shown that substituting conventional meat for plant-based meat leads to reductions in cholesterol.

Appendix 2 - National Food Strategy recommendations relating to alternative proteins

The NFS's recommendations for alternative proteins were mostly contained within Recommendation 11 - Invest £1 billion in innovation to create a better food system. They represented 12.5% of the total investment proposed under this recommendation.

£50m for an alternative protein "cluster"

"The Government should put £50m towards building shared facilities in a commercial "cluster" for entrepreneurs and scientists working on alternative proteins. Having a physical centre where many different players in the same field can set up base is known to encourage creativity and the cross-fertilisation of ideas." **p.160**

"Defra should put an additional £50m towards a commercial innovation "cluster" to develop, test and scale up alternative proteins. This cluster should be based around an existing area of investment, such as the Centre for Process Innovation's novel food unit, or one of the Agri-Tech Centres. The funding would provide open-access facilities to allow emerging businesses to test and scale up new products. It would be complemented by commercial revenue." **p.242**

"Funding a new innovation cluster for alternative proteins will cost the Government £50m, which should all be delivered in year 1 (2022–23). Funding should be secured through a bid in the next Spending Review, coordinated by Defra and working with BEIS and UKRI. This recommendation will deliver a long-term net economic benefit to the UK estimated to be £350m." **p.245**

£75m in grants for alternative protein start-ups

"Annual grants for [alternative protein] start-ups of £15m for five years from the new Challenge Fund." **p.160**

"This mission should be backed by a new "challenge fund" worth £500 million over five years, with investment distributed by UK Research and Innovation (UKRI). Crucially, the money should be spent on projects that make the food system better in practice rather than simply on new ideas. At present, most of the Government money that goes into food-related innovation is directed towards scientists and academics. In many of the other areas where innovation happens – on farms, for example, or in start-up businesses or community projects – there has long been a funding drought." **p.159**

"Establishing a £500m fund, managed by UK Research and Innovation (UKRI), to invest in innovation for healthy and sustainable diets, including £75m for alternative proteins." **p.241**

"The [£500m Challenge Fund] should be managed by UKRI and open to applications from projects which are likely to have a practical impact. Projects of all sizes would be eligible for funding and could be commercial or non-commercial in nature. To ensure that support reaches a wide variety of fields, UKRI should invite people from businesses, community enterprises and Government, as well as academia, to govern the fund and review project proposals. The funding should include innovative mechanisms for leveraging private investment, building on the experience of initiatives such as the Transforming Food Production Series A Investor Partnership Programme. The challenge fund would be managed in coordination with complementary innovation funds across Government." **p.241**

Mandatory reporting on protein sales for large food companies

"All food businesses with over 250 employees should have a legal duty to publish annual data on their sales of various product types as well as food waste. This duty would extend to retailers, restaurants and fast food outlets, contract caterers, wholesalers, manufacturers and online ordering platforms. Food businesses with a franchising model would be treated as the sum of their franchisees operating under the same brand. The report should include figures (both value in sterling and volume in tonnes) for:

- Sales of food and drink high in fat, sugar or salt (HFSS) excluding alcohol
- **Sales of protein by type (of meat, dairy, fish, plant, or alternative protein) and origin**.
- Sales of vegetables.
- Sales of fruit.
- Sales of major nutrients: fibre, saturated fat, sugar and salt.
- Food waste.
- Total food and drink sales." **p.202**

"The ultimate aim of the proposal is to change sales and consumption patterns for the foods for which reporting is required. This is important because these foods account for the main discrepancies between what the Government recommends people eat and what they actually do. Two-thirds of the population eat less than the minimum recommended level of fruit and vegetables and a third eat more than the maximum recommended level of red and processed meat. Across the population, we would need to increase our fibre intake by 50% and cut our consumption of sugar, salt and saturated fat by 12–40% to meet the recommended levels. These discrepancies have a number of serious consequences for our health and the environment, which are outlined under other recommendations." **p.203**

Appendix 3 - Government Food Strategy commitments relating to alternative proteins

Investing in alternative proteins as part of £120m UKRI funding for the food system

"The alternative protein sector provides another opportunity for growth, complementing traditional livestock sectors. The UK has been at the forefront of innovation in protein sources since the development of Quorn products in the 1980s, with a world leading production facility in Billingham creating jobs and investment in North-East England. The government will keep the UK at the front of this growing and innovative sector by supporting alternative protein research and innovation, including as part of our partnership with UK Research and Innovation (UKRI) to invest over £120 million in research across the food system." **p.17**

"We will work with UKRI, industry and consumer groups to develop joint priority areas for funding, including regional priorities, and proposals to access this, for example on industry automation and alternative proteins" **p.19**

New guidance for market authorisation of alternative proteins & review the novel food regulations

"We will also work with the FSA to develop dedicated guidance materials for approval of new alternative protein products while reviewing our novel food regulations. This will ensure they are transparent for innovators and investors, whilst maintaining world-leading consumer safety standards." **p.20**