Alternative proteins & better food futures:

Moving beyond the binaries

The aim of this briefing paper is to set the stage for our three-part webinar exploring the debates surrounding alternative proteins (APs). This is an opportunity for both advocates and critics to come together to engage in a meaningful and nuanced discussion on novel APs (e.g., cell-cultivated meat and new fermentation-derived proteins). We are keen to identify areas of commonality, as well as areas of, and reasons for, disagreement.

Framing the Discussion

The global food system is under increasing strain. Climate change, biodiversity loss, health crises, and entrenched poverty and inequity - to which the food system both contributes and is impacted by - are driving calls for systemic transformation. A key area of focus is on the need to address the problems caused by current systems of livestock production. To respond to these livestock-induced challenges a variety of ways forward have been proposed. These include measures to improve the way we farm animals, and to encourage a dietary shift away from animal products and towards more diverse plant-based diets.

The development of novel “alternative proteins” (e.g., cell-cultivated meat and new fermentation-derived proteins) is one of the more contentious solutions proposed and polarised narratives surrounding them have so far limited the possibility for constructive, inclusive dialogue. Advocates for APs assert that they can facilitate a transition to healthier, more sustainable food systems without requiring a significant shift in dietary habits. Critics of APs have disputed the evidence for these health and environmental claims and have also raised concerns about the concentration of power and the implications for human-nature relationships. The binary nature of the discourse hampers a much-needed focus on striving for consensus on how to progress towards more healthy and sustainable food systems.

Included in this brief

TABLE

Introduction to Alternative Proteins

APs are food sources designed to imitate a combination of taste, texture, and nutritional content of meat or other animal-sourced foods. The term “alternative” is itself somewhat tricky to define, as it encompasses foods that might share many or only one characteristic with their animal-sourced equivalents, such as, function, taste, texture, or nutritional profile. It is also worth noting that, the notion of these products as an “alternative” frames animal-sourced foods, and the format in which they are consumed (e.g., with meat as the staple of a meal), as the norm.

Broadly speaking there are several types of APs that can be grouped into the following categories:

- **Plant-based protein:** Unprocessed whole foods such as pulses and grains. Across the globe, these are a traditional and major source of protein in diets, particularly in lower-income countries.
- **Insect-based protein:** High-protein content alternatives to traditional animal proteins. Considered novel for certain cultures but has long been part of the diet in many cultures.
- **Plant-based meat substitutes**: Proteins extracted from plant-based products (e.g., rice, peas, soy) that are often highly processed to mimic meat.
- **New fermentation-derived foods**: Proteins derived from microorganisms like fungi, bacteria, and yeast through fermentation. This process can be used to create alternative protein sources that can be incorporated into various food products, including meat and dairy alternatives.
- **Cell-cultivated meat:** Cultivated meat is meat produced directly from animal cells. The process of cultivating meat involves taking a small sample of cells and providing them with the necessary nutrients and conditions to build muscle and fat. At the cellular level, cultivated meat is identical to conventional meat.

The focus of this webinar series is on the debates and developments surrounding these final two categories, new fermentation-derived foods, and cell-cultivated meat, because they tend to be the focus of most contestation. The webinar series and discussions will be structured around three themes: 1. drivers, investments, trends, and regulation of APs; 2. health dimensions of APs; and 3. the environmental dimensions of APs. Throughout there will be cross-cutting discussions around power (who has it, who should have it, who might win or lose as a result of AP developments) and nature (how do developments in APs both reflect and influence our relationship with the natural world?).

Webinar 1: Drivers, Investments, Trends & Regulation of APs (24th June 2025)

INVESTMENT LANDSCAPE

There has been significant financial investment into APs and advocates predict continued growth. The Good Food Institute estimates that $18.6 billion has been committed since 2016, with an increasing focus on fermentation-derived proteins and cell-cultivated proteins over recent years. Advocates argue that with a combination of innovation and a supportive policy environment, the global AP market could be worth £226 billion by 2035. However, concerns have been raised regarding the

extent to which corporate and investor logic is shaping these developments, rather than the public good, and critics draw attention to the risk of corporate concentration in the sector. To navigate this divide we will explore the perspectives of stakeholders engaged in this space, asking questions that include:

- What do we know about the state of investment in APs?
- Which sectors are driving this investment?
- Is there a role for public bodies to support investment in APs and if so, what? What are the risks and benefits of public-private investment partnerships in this space especially when it comes to public trust in the regulatory environment?
- Will investment in APs - especially those that are still at the “proof of concept” stage - reduce investment in other, more tangible, proposed solutions (e.g., improvements in existing livestock production or dietary shift)?
- To what extent is power concentrated around a handful of corporate actors? Who is profiting from the development of APs? Who is monitoring the investment and development of APs?
- To what extent do investments in APs foster a belief that global populations are deficient in protein and “need” more - in other words, how does the problem diagnosis define the “solution”?

REGULATORY ENVIRONMENT

The development of novel APs faces a complex mix of commercial and regulatory challenges. Whilst the development of APs is accelerating, regulation and policy structures have yet to catch up and this has created friction between innovation and commercialisation. Regulation of novel APs (e.g., cell-cultivated meat and new-fermentation derived proteins) varies widely by country, and several countries, including the UK, are still assessing their pathways forward. This has led to questions surrounding the role and remit of the regulator in regard to APs. We hope to explore these questions by asking:

- What do regulators need to take into account when assessing APs? Should the focus be narrow (e.g., food safety) or broad (e.g., broader health and environmental implications)? Should other public sector bodies (e.g., public health) feed into the regulation of APs?
- How could we regulate APs in a way that avoids corporate concentration of power and ensures public benefit?
- What would a supportive regulatory environment look like for the AP sector?
- What benchmarks and metrics should be used to regulate and assess the impact of APs?
- To what extent is regulation shaped by viewing people as citizens or consumers?

CONSUMER DYNAMICS

Like any new food, the success of novel APs depends on whether or not people are willing to eat them. Currently, consumer perceptions and acceptance of APs are mixed; willingness to accept, or consider, these products is driven by a range of factors and values including product characteristics (e.g., taste, texture), economic factors (e.g., product costs), ethical dimensions (e.g., animal welfare), environmental concerns (e.g., the environmental impact of conventional agriculture), or the extent to which an individual is optimistic or sceptical about technological innovation. For example, those who are wary of novel APs may question their ‘naturalness’, and their ideological preferences for ‘natural’ food feed into their fears of high-tech food production methods. This also raises questions on how we frame people in these debates. Do we / should we think of people as consumers

focused on individual considerations (e.g., personal choices, personal health) or as citizens concerned about their society (e.g., planetary health, non-human animals)?

Ultimately, there is still much we do not know about the values driving consumer perceptions of novel APs. Through exploratory discussions with panellists, we will explore questions such as:

- What do consumers need to know, or think about, when considering novel APs? What are the barriers to acceptance of APs? What types of consumers are interested in these products? What is the level of consumer acceptability and public deliberation around these foods?
- What difference would a citizen-focused versus a consumer-focused approach make?
- To what extent is the development of novel APs being driven by genuine consumer demand or by investor and business logic? How are businesses considering marketing these products to consumers?
- Who would the public trust to develop APs?

Webinar 2: Health Dimensions of Alternative Proteins (30th June 2025)

There is limited research surrounding the health dimensions of novel APs (e.g., cell-cultivated meat and new fermentation-derived proteins) and the argued health benefits are subject to considerable controversy. Proponents have claimed that APs have the potential to address global nutrient deficiencies, offer health benefits exceeding those of animal-based protein, and reduce the threat of antibiotic resistance and zoonotic diseases. For example, it is posited that technological innovations may enable producers to optimise the nutritional composition of APs, including by reducing or eliminating the amounts of saturated fats and dietary cholesterol or adding essential nutrients like fibre, potentially making them healthier than their livestock-derived counterparts. On the other hand, critics have questioned a narrow nutrient-centered logic that overlooks the importance of a holistic systems approach to health, raised concerns around food safety and regulatory gaps, and stressed the importance of inclusive and culturally appropriate solutions to health and dietary challenges.

The variability between narratives, the vagueness of the “alternative protein” label (studies may focus on very different foods that fall under the “alternative” umbrella), differing metrics used to assess questions of health and nutrition, and the degree to which we are comparing like for like products (animal-based foods vs. alternative proteins) illustrate that there is still much that we do not know regarding the individual and societal health implications of these novel food products. Through discussions with panellists we will explore such questions, for example:

- Can APs address micronutrient deficiencies and reduce our reliance on traditional animal products for these nutrients? Is it possible to say anything yet about the comparative nutritional advantages/disadvantages of novel APs (e.g., cultivated meat and new precision fermented proteins) vs. conventional and plant-based proteins?
- What health and nutrition metrics could guide assessments of APs? What research is needed to assess the health claims of novel APs and how can the research community facilitate this?
- How can APs be enhanced nutritionally (e.g., reduction in saturated fats and dietary cholesterol) compared to conventional animal proteins with fixed nutrition profiles?

- Where do novel APs fit into the debate surrounding ultra-processed foods?
- To what extent can APs support culturally sensitive dietary needs? Is the lens of “protein” useful or does it neglect other elements (e.g., equity and diversity) and reflect nutrient-centered logics?
- How do claims around the nutritional benefits of novel APs sit in the context of arguments that the greater concern is with the corporate drivers of (ill)health, including supply chain concentration, marketing and advertising?

Webinar 3: Environmental Dimensions of Alternative Proteins (14th July 2025)

Food is identified as the largest driver of environmental degradation, exceeding safe planetary boundaries in GHG emissions, nitrogen/phosphorus use, and biodiversity loss. APs have been presented as a potential solution, in so far as they enable us to move away from land and input-dependent conventional agriculture, thereby mitigating these environmental concerns, and nurturing more sustainable food systems. This view sees a need for us to minimise our footprint on landscapes and restore nature, even if by doing so we use “less natural” forms of food production. However, APs are not immune from environmental challenges and in particular concerns have been raised over the energy usage of APs and their reliance on nutrient resources. There are very few examples of AP production at an industrial scale, and it is yet unclear what the true environmental impact will be. More fundamentally, concerns have been voiced that purportedly landless forms of production such as these entrench a problematic mindset which sees humans as separate from, rather as part of the natural world.

This webinar will explore questions that include:

- How do panellists engage with the question of “naturalness” as a goal for our food and farming systems? To what extent can APs be considered “natural”?
- What are the comparative environmental impacts of novel APs vs. conventional and plant-based proteins? Can APs address the environmental concerns (e.g., energy use, supply chain sustainability) associated with conventional farming methods?
- What metrics are currently used to assess the environmental impacts of APs and what alternative metrics might be needed to more accurately represent the environmental costs/benefits of APs?
- Can APs work side-by-side with “better” (perhaps higher welfare) livestock systems - is there space for both?
- To what extent could the mass adoption of APs be the decisive blow to the conventional farming sector and the viability of that sector?
- As, or if, alternative production scales, are unequal power structures within the food system still maintained, and who or what suffers as a result?

Webinar Structure

4:00 - 4:05 pm: Start

4:05 - 4:10 pm: Introduction and aims of the workshop.

4:10 - 4:25 pm: Short presentations by panellists (3-5 minutes each)

4:25 - 4:55 pm: Moderated discussion.

4:55 - 5:25 pm: Audience Q&A.

5:25 - 5:30 pm: Wrap up, next webinar dates, and next steps.

Tempeh skewers. Photo by Ella Olsson via Pexels.