



FOOD FERMENTATION EUROPE

For a future-proof, competitive and resilient sustainable food system

Food Fermentation Europe's Vision on the
upcoming Sustainable Food Systems
Framework

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Core Vision

Unlock the potential of fermentation-enabled food production technologies to position the European Union as a world leader in sustainable food innovation.

Pillar I

Sustainable & resilient food systems



Implement an ambitious sustainable food systems framework that recognises the potential of key technologies such as precision fermentation to contribute to food security in Europe by reducing the environmental, biodiversity and climate impact of food systems.

Pillar II

Regulatory pathway



Foster a transparent and much more efficient regulatory pathway that is responsive to innovative solutions and addresses existing barriers to the production and market access of alternative proteins.

Pillar III

Innovation bioeconomy & protein transition



Recognise fermentation-enabled foods and products as promising and innovative solutions in view of the European Protein Strategy.



Introduction

Food Fermentation Europe acts as the unified voice representing the transformative fermentation-enabled food and food ingredient sector. Its mission is to ensure a speedy and expeditious roll-out of fermentation-enabled technologies in the European Union by advocating for legislation that supports food innovation and sustainability, and that removes barriers to market access. Our alliance also aims to make the European Union a leader of the bioeconomy.

This vision paper outlines Food Fermentation Europe's views and recommendations for a future-proof, competitive and resilient sustainable food system.

Our vision

Europe and the wider world need to reduce emissions from the agri-food system to tackle the joint climate and health crisis, reach the goals of the Green Deal and create an environment for a strong, competitive, and future-proof bioeconomy. The climate crisis has revealed the fragility of our food systems, which is contributing to food insecurity, and needs to be addressed urgently. Fostering food system resiliency and sovereignty in the European Union is no longer an option, but a necessity. What's more, feeding a fast-growing world population remains a challenge with current production patterns.

Through the Green Deal, the European Union has set the ambitious goal to reach no net emissions of greenhouse

gas (GHG) by 2050, covering all emitting sectors including agriculture and food.

Several key transformative strategies have been proposed to achieve this objective including the REPowerEU for an affordable, secure and sustainable energy for Europe, or the Industrial Plan for the Net-Zero Age aimed at scaling up clean technologies. Another key pillar is the Farm to Fork strategy, aimed at fostering "a sustainable food system to achieve the climate, biodiversity and other environmental objectives of the Green Deal, while improving the incomes of primary producers and reinforcing the European Union's competitiveness".

Food production is currently responsible for nearly a third of global GHG emissions, with 80 percent coming from livestock. The scientific [consensus](#) shows that meat, dairy and egg production currently account for around 77% of agricultural land use and 1/3 of humanity's water footprint, but produces only 18% of the world's calories and 37% of its protein. In the European Union, animal agriculture is responsible for at least 10% of the region's GHG emissions, and 70% of land goes to feeding animals, rather than human beings.

Clearly, a radical rethinking of our food systems is urgently needed. But what if we did not have to reinvent the wheel?

One of the key innovative solutions is precision fermentation

Combining centuries old techniques with new innovations, precision fermentation can produce specific animal free



proteins and fats, leading to high quality alternatives for milk, eggs, cheese and much more. Using microbes to produce these products means they are animal free, drastically reducing emissions, water- and land-use, as well as the environmental footprint of food production, while providing consumers with the nutritious food they love.

Fermentation-enabled technology can not only contribute to climate change mitigation, but also help us to adapt to a new geopolitical reality, where food security has become a pressing issue.

Fostering this technology in Europe can help to contribute to more resilient food systems, as well as help to reduce dependency and supply chain-related issues.

By enabling breakthrough solutions like this, the European Union can boost its bioeconomy and position itself as a world leader in food innovation, but also contribute to address the pressing interlinked environmental, climate, biodiversity, and food security challenges we face.

Our recommendations for Sustainable Food Systems

The below recommendations aim to inform the upcoming Sustainable Food Systems Framework, as well as the connected EU Protein and Bioeconomy strategies:

Pillar I – Regulatory pathway & bioeconomy

Recommendation: Implement an ambitious Sustainable Food Systems framework that recognises the potential of key technologies such as precision fermentation to contribute to food security in Europe by reducing the environmental, biodiversity and climate impact of food systems.

Competitiveness

- The Sustainable Food Systems framework constitutes a major opportunity to set ambitious targets for a transition of the entire European food system.
- As recently [highlighted](#) by the non-profit World Wildlife Fund, one of the biggest threats to the food security of European citizens is the European food system itself. This is due to the fact that currently, Europe heavily relies on costly external agricultural inputs to sustain intensive farming and fosters unhealthy consumption.
- Europe's agri-food system is highly dependent on animal and land agriculture, which are major causes of GHG emissions, biodiversity loss and animal welfare issues.
- Any significant overall change in diets toward more alternative proteins will have an immediate cooling effect on the planet, since GHG emissions from animal farming include a substantial portion of methane – as much as 50%.



- This comes as a new report from the [Climate Works Foundation](#) and the Global Methane Hub highlights the importance of government investment in alternative proteins to cut down methane emissions and fuel growth in the global economy. Investing in innovations that reduce methane emissions, the report estimates, could contribute \$700 billion in gross value added to the global economy by 2050 – 98% of which is expected to stem directly from sustainable proteins. To avoid falling behind on other markets we must not be chasing but leading on future technologies, including precision fermentation. It is not too late to act.

Sustainable footprint across European Union impact categories

- Precision fermentation offers the chance to drastically reduce the footprint of food production. The [anticipatory life cycle assessment \(LCA\)](#) of cell-cultured egg white protein suggests that these substitutes could reduce environmental impacts across a range of different impact categories, such as Global Warming Potential (GWP), land use, marine eutrophication, terrestrial acidification and stratospheric ozone depletion in Finland, Germany and Poland.
- If we remain on track for an 11% share for alternative proteins by 2035, we will see a [reduction](#) of 0.85 gigaton of CO₂ equivalent (CO₂e) worldwide by 2030 – equal to decarbonising 95% of the aviation industry.
- Fermentation can also play a fundamental role in ecological restoration. By avoiding animal farming and intensive land agriculture, this technology can enable the rewilding of the vast lands now occupied by livestock or by the crops used to feed them.
- Finally, even the fiercest defenders of animal agriculture recognise the animal welfare issues with the meat, egg and dairy industries, and that they must change to cater for better living conditions for animals.
- Animal-free, fermentation-enabled technology brings major animal welfare benefits which will also have a massive impact on human health through the prevention of zoonotic-driven diseases and pandemics.
- We see two main challenges to unlocking fermentation-enabled food products' great potential for animal welfare and public health, European food system resilience and sustainability impact:

1. building a regulatory pathway fit for purpose;

2. integrating alternative proteins in the bioeconomy and protein strategies.

Pillar II – Regulatory pathway

Recommendation: Foster a transparent and much more efficient regulatory pathway that is responsive to innovative solutions and addresses existing barriers to the production and marketing of alternative proteins.

Competitiveness

- To avoid falling behind other regions, the European Union should aim to be an agenda setter, rather than a follower, on future food technologies, including precision fermentation. It is not too late to act.



- By empowering fermentation-enabled technologies through a much faster and more efficient Novel Foods regulatory pathway, the European Union can show what can be achieved through innovation in the food sector, namely, environmental, climate, consumer and economic benefits.
- To fulfil the goals of the 2021 [Transparency Regulation](#), the European Union should work to better implement the Novel Foods Regulation, by fostering an open and transparent regulatory approval process, which includes regular and open dialogue with stakeholders, as well as by providing timely and clear information on implementation to applicants. In particular, updated guidance documents and formal avenues for pre-submission consultations should be communicated with stakeholders. In short, the European Union needs to work to address some of the challenges related to the authorisation process which are currently delaying the production and marketing of alternative proteins.
- The sustainability benefits of new solutions including environmental and climate risk mitigation, also need to be considered in the approval process, so that it matches the European Green Deal ambitions.

Pillar III – Innovative bioeconomy and protein transition

Recommendation: Recognise fermentation-enabled foods and products as promising and innovative solutions in view of the European Protein Strategy

Rising protein demands

- We urge the European Commission to recognise the potential of fermentation-enabled foods and food ingredients, as well as the need for protein diversification more broadly, in order to boost food protein production in Europe and inform consumers of the added value of these products.
- Academic analysis [shows](#) it will be impossible for a global population of 10 billion – a figure expected around 2050 – to consume the amount and type of protein typical of current diets in North America and Europe if we want to achieve the UN Sustainable Development Goals (SDGs) and meet the targets set by the 2015 Paris Climate Agreement.
- However, according to FAO, world demand for meat and dairy is expected to sharply [increase](#) between now and 2050, including by +15% over the next ten years for meat and by 25% by 2027 for milk and dairy products.
- The alternative protein and food system transitions go hand in hand. We can no longer respond to the world's rising meat and dairy demands without further harming our planet.
- In order to match food supply and demand, we need to make space for alternative, sustainable ways of creating protein. This entails laying out a strategy that does not only focus on feed, but also on food.
- [Surveys](#) across multiple Member States have shown that consumers are enthusiastic and curious about fermentation technology and willing to buy such products. Many readily see the advantages, including improved animal welfare, increased choice and lower environmental impact.



- Education is key in driving consumer acceptance of alternative proteins and novel foods. Consumers should be informed about the opportunities of new scientific ideas that can solve current social, economic and environmental challenges. This is crucial to dispel myths and misconceptions through raising awareness among consumers about current science.

Just transition and a new job market

- Current stakeholders of the food system, particularly farmers, cannot be left out. They will be central to this new paradigm.
- Through the Common Agriculture Policy (CAP), the European Union needs to put in place the right incentives to help farmers transition from intensive to more sustainable practices, but also create an inclusive food system and bring together stakeholders and foster cooperation pathways.
- Economic opportunities can be created through the industrial production of fermentation-enabled food and food ingredients in rural areas, where farmers can be involved in the supply of raw ingredients needed to produce fermentation proteins.
- The fermentation sector provides a huge opportunity to utilise virtually all agricultural by-products, from sunflower seed waste to sugar fibres and spent grains from the brewing industry, as well as other waste products from the food, biomaterial and biofuel industries.

Bioeconomy and new industrial infrastructure

- The European Commission needs to recognise new solutions like precision fermentation that have emerged at scale since the last update of the Bioeconomy Strategy, and to make the strategy an integral aspect of the reformed CAP.
- The bioeconomy as a concept today remains too abstract so that only a few people understand what is behind it. It is not associated with tangible products, least of all when it comes to food.
- This lack of awareness leads to ignorance of the opportunities to shift the market and support new business models as part of the solution to the climate and food crises.
- The European Union has in principle recognised the significance of the bioeconomy and its link to food through its latest update of the Bioeconomy Strategy, but it is missing a strong focus on food production. Europe therefore risks missing out on key international developments and opportunities offered by innovations like food fermentation technologies.
- We therefore strongly support the recent conclusions of the AGRIFISH Council which highlighted the need to update the Bioeconomy Strategy and integrate bioeconomy in all policies, to enable it to play a key role in achieving the Green Deal's environmental and climate goals, while also making the European Union more competitive and strengthening food security.
- Beyond this, to help emerging sectors like precision fermentation scale, the European Union and its Member States should massively invest in establishing the infrastructure needed to roll-out innovative products to the market and create an integrated ecosystem in Europe.



- We cannot afford to miss out on this opportunity that will drastically impact European livelihoods, including employment opportunities in the food tech sector, as well as the economy and climate mitigation efforts.

Conclusion

By putting food innovation and the bioeconomy at the heart of the shift to sustainable food systems, policymakers can leverage the European Union's full potential and unexploited strengths to foster a resilient and inclusive food system. This shift must be all-encompassing and explore improvements that can be made in food safety regulation, industrial policy, as well as food, sustainability and health policies.

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