Like a PRO

POLICY BRIEF

Alternative Protein Ingredients: Pathways for Sustainable Diets in Europe

EXECUTIVE SUMMARY

The success of the protein transition in Europe depends on moving away from animal-based products and accelerating the speed at which alternative protein sources are integrated into the European diet. Although animal-based products remain the pillar of dietary protein consumption in Europe, these products contribute to greenhouse gas emissions, land and water use, and biodiversity loss, while the consumption of animal-based protein sources, such as red and processed meat, is associated with the risk of non-communicable diseases such as heart disease and cancer[1, 2, 3]. Considering these challenges, alternative protein ingredients (APIs) emerge as a solution to support a more sustainable and healthy protein transition. Existing knowledge indicates that protein ingredients sourced from plants, fungi, insects, and microorganisms have shown positive nutritional benefits, offering a solution to environmental challenges at a fraction of the cost of animal-based protein products[2,4]. This is in line with increased interest in sustainable food solutions, leading to increased innovation in alternative protein ingredients. As a result, a range of innovative protein ingredients have been created in the LIKE-A-PRO project, showing their successful application in various food products such as meat analogues, beverages, and powdered ingredients. However, innovation alone is not enough to drive large-scale adoption. There remain structural issues, such as regulatory uncertainty, consumer familiarity and acceptability, and issues of scale in terms of production and integration into the market. There is also evidence to suggest that to drive a change in diets, not only is mere availability of sustainable options necessary, but also a policy framework that enables actual changes in behaviour. Policy intervention is thus a critical factor to support innovation and the availability of APIs, such as providing regulatory certainty, innovation, and favourable market conditions to support scaling-up, as well as raising awareness and availability to drive consumer familiarity and acceptability.

This policy brief, based on project findings and evidence, will outline some of the opportunities and challenges for APIs, providing recommendations for decision-makers at a European and national level to support innovation, policy, and consumer engagement, thus ensuring a key role for APIs in driving forward a protein transition to a more sustainable, resilient, and healthy food system in Europe.

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BACKGROUND & CONTEXT

The existing dietary patterns in Europe are characterised by a high intake of animal-based proteins, and meat and dairy products continue to dominate the European diet in terms of protein consumption. Although these food products are good sources of nutrients, animal-based food production is also a major cause of negative environmental consequences, such as greenhouse gas emissions and is even a significant cause of land and water use, deforestation, and biodiversity loss. Therefore, animal-based food production is considered a highly resource-intensive activity in the food chain[1,3], and the increasing demand for animal-based food products is expected to further intensify the negative consequences of food production in the coming years. From a health point of view, a high intake of red and processed meat is considered a major cause of non-communicable diseases such as cardiovascular diseases, diabetes mellitus, and cancer. The World Health Organisation has also classified processed meat as a cause of cancer in humans and emphasised the need for changing food patterns to healthier ones[3]. In this context, the role of alternative protein ingredients is an opportunity to provide the nutritional benefits of protein while reducing the environmental impact significantly. Sources such as plants, fungi, insects, and microorganisms can be used to develop various food products that are not only nutritionally adequate but also more sustainable. These ingredients are increasingly recognised as enablers of the so-called "protein transition", which is the shift towards more sustainable protein sources while ensuring quality diets. The LIKE-A-PRO project is an initiative towards the protein transition by developing innovative alternative protein ingredients with high potential for integration into the European diet. With the progress made in innovating alternative protein ingredients, the obvious next step is toward the adoption stage. This is not only possible through innovation but also through the policymaking process, which is the focus of the present brief. The policymaking process is essential in accelerating of the protein transition, enabling effective contribution of alternative protein ingredients to a sustainable, resilient, and healthy food system in Europe.

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EVIDENCE ON ALTERNATIVE PROTEIN INGREDIENTS

There are several alternative protein ingredients that have been developed in recent years, which is a testament to the high rate of innovation occurring in the food industry — discussed in detail in the LIKE-A-PRO project's deliverable on Alternative Protein Product Portfolios. APIs are made from various sources, including plant-based proteins, fungi and mycoproteins, insects, and microorganisms. These ingredients each have different uses for food products, proving to be versatile and easily integrable into existing patterns of food consumption without having to make significant behavioural changes. The case for alternative protein ingredients is most clear when discussing the environment. Food production is a major contributor to greenhouse gas emissions and is a significant cause of land use, water use, and biodiversity loss[1, 5]. Within this production process, animal-based protein products are shown to have the largest impact on the environment throughout the food production chain, particularly beef and lamb products. The use of alternative protein ingredients is shown to have a positive effect on the environment due to the lower resource use and emissions of these food products. Health factors also support the argument for dietary change. High consumption of red meat and processed meat products has been consistently related to the risk of non-communicable diseases, including heart disease, type 2 diabetes, and cancer. Processed meat products have even been classified as carcinogenic to humans, and red meat as 'probably carcinogenic'[6]. Yet the global consumption of meat products has only continued to rise over the last decades, a pattern projected to continue based on existing demand[7, 8, 9, 10, 11, 2]. On the other hand, dietary habits with a greater proportion of plant-based and alternative proteins show positive health benefits and support the concept of sustainable healthy diets[2, 3].

Apart from the environmental and health advantages, alternative proteins have emerged as an important aspect in addressing other issues in the food system. For instance, to feed a growing global population within planetary boundaries, there is a need to move towards more resource-efficient sources of protein. This has been noted in different studies[2], including by the Food & Agriculture Organisation of the UN[3], including the potential of plant- and insect-based foods in contributing to global food security[12, 13].

However, it should be noted that the incorporation of APIs in the food system can be achieved incrementally rather than through major dietetic changes. Evidence from the LIKE-A-PRO deliverable on alternative protein integration in EU diets indicates that consumer acceptability of alternative proteins can be significantly affected by different factors, among them familiarity, exposure, and perceptions of health and social benefits. Therefore, increasing availability, visibility, and accessibility of alternative protein sources can play an important role in changing consumer behaviour. Although there is a lot to be achieved in the food system, the potential of alternative proteins in addressing food security and sustainability issues in the European food system remains highly promising. Yet despite its promise, the development and application of APIs have remained a challenge.

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POLICY RECOMMENDATIONS

To drive the adoption of alternative protein ingredients in Europe, it is important to take systemic[14] and coordinated approaches to address both supply and demand, as well as the food environment[15] as a whole.

1 Strengthen support for research, innovation, and scale-up

Funding is part of the problem, but also part of the solution and, right now, it's not quite doing the job. There is already money on the table, for example through programmes like Horizon Europe, but in practice it doesn't always reach the stage where it actually makes a difference for companies trying to bring alternative protein ingredients to market. What's missing is a better connection between research and real-world deployment. Too often, projects stop at the development phase, while scaling and commercialization remain under-supported. This is where more targeted financial tools could make a difference, things like innovation funds, blended finance or risk-sharing schemes, especially SMEs that are trying to move from promising prototypes to actual products. And then there's the issue of scaling itself. Pilot and demonstration facilities sound technical, but they are often real bottlenecks. Without them, it is hard to move beyond small-scale production, and costs stay high. If the goal is to make APIs competitive and widely available, this is one of the areas where policy support really needs to step up.

2 Establish clear and harmonised regulatory frameworks

Regulation keeps coming up as a barrier, but it is worth being clear about what that means in practice. The issue is not that rules are missing; it is that, for many alternative protein ingredients, the process is still hard to navigate. Companies often face long and uncertain approval timelines, limited guidance on what is required, and very few precedent cases to rely on. This makes planning investments risky and slows things down more than it should. There is also a second layer to this, which is how these products are presented to consumers. Right now, labelling is not always clear or consistent, and that creates confusion. If consumers do not understand what they are buying, or feel unsure about it, uptake will remain limited, regardless of how innovative the product is. In practical terms, improving the situation does not necessarily mean rewriting the whole framework. It is more about making it work better: clearer timelines for approvals, more direct exchanges between companies and authorities before submission, and more consistent approaches to labelling so that consumers can make informed choices.

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3 Increase consumer exposure through public food environments

It is important to drive the adoption of APIs by increasing the availability of APIs in public food environments. Particularly in public procurement environments, including schools, hospitals, and public canteens, where their presence can be indicated in menus to help the public make informed choices. Adoption of APIs can be further driven by supporting public awareness, education, and cooking skills initiatives.

4 Improve availability and visibility of alternative protein products

Another factor affecting the use of APIs is their visibility in traditional retail settings. It may not be enough simply to make these products more accessible, as they will remain on the margins if they do not grab attention. Although product placement and dedicated shelving are currently used, these initiatives are not implemented effectively, which confines them to niche categories. In this regard, policies must support the efforts of retailers and restaurateurs to increase the visibility and recognition of API-based products compared to other products.

5 Integrate alternative proteins into broader food and health strategies

Inclusion of APIs in larger food and health policies will be necessary to have a smooth transition towards more sustainable sources of proteins, although the process must be carried out practically. On the EU level, one option might be to integrate these sources of proteins into dietary recommendations and other health policy instruments while linking to other strategies such as the Farm to Fork Strategy among others. On the other hand, food and agriculture policies must also address the necessity of diversification in terms of protein consumption, for instance through the inclusion of alternative sources of protein in funding mechanisms and national food policies. Combining all these measures would ensure that they do not operate separately from each other.

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REFERENCES

1. Ritchie, H., Rosado, P., and Roser, M. (2022). "Environmental Impacts of Food Production", Our World in Data. Available at: Link

2. Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., Garnett, T., Tilman, D., DeClerck, F., Wood, A., Jonell, M., Clark, M., Gordon, L., Fanzo, J., Hawkes, C., Zurayk, R., Rivera, J., De Vries, W., Majele Sibanda, L., Afshin, A., Chaudhary, A., Herrero, M., Agustina, R., Branca, F., Lartey, A., Fan, S., Crona, B., Fox, E., Bignet, V., Troell, M., Lindahl, T., Singh, S., Cornell, S., Reddy, S., Narain, S., Nishtar, S., Murray, C. (2019). "Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems", *The Lancet Commissions*, 393(10170): 447–492. Available at: Link

3. (WHO) World Health Organisation. (2023). *Red and Processed Meat in the Context of Health and the Environment: Many Shades of Red and Green*. Geneva: WHO. Available at: Link

4. (FAO) Food & Agriculture Organisation of the United Nations and (WHO) World Health Organisation. (2019). *Sustainable Healthy Diets: Guiding Principles*. Rome: FAO/WHO. Available at: Link

5. Poore, J. and Nemecek, T. (2018). "Reducing food's environmental impacts through producers and consumers", *Science*, 360(6392): 987–992. Available at: Link

6. (WHO) World Health Organisation. (2015). "Cancer: Carcinogenicity of the consumption of red meat and processed meat". Available at: Link

7. Godfray, H., Aveyard, P., Garnett, T., Hall, J., Key, T., Lorimer, J., Pierrehumbert, R., Scarborough, P., Springmann, M., and Jebb, S. (2018). "Meat consumption, health, and the environment", *Science,* 361(6399). Available at: Link

8. Miller, V., Reedy, J., Cudhea, F., Zhang, J., Shi, P., Erndt-Marino, J., Coates, J., Micha, R., Webb, P., and Mozaffarian, D. (2022). "Global, regional, and national consumption of animal-source foods between 1990 and 2018: findings from the Global Dietary Database", *Lancet Planet Health*, 6(3): e243–e256. Available at: Link

9. Swinburn, B., Kraak, V., Allender, S., Atkins, V., Baker, P., Bogard, J., Brinsden, H., Calvillo, A., De Schutter, O., Devarajan, R., Ezzati, M., Friel, S., Goenka, S., Hammond, R., Hastings, G., Hawkes, C., Herrero, M., Hovmand, P., Howden, M., Jaacks, L., Kapetanaki, A., Kasman, M., Kuhnlein, H., Kumanyika, S., Larijani, B., Lobstein, T., Long, M., Matsudo, V., Mills, S., Morgan, G., Morshed, A., Nece, P., Pan, A., Patterson, D., Sacks, G., Shekar, M., Simmons, G., Smit, W., Tootee, A., Vandevijvere, S., Waterlander, W., Wolfenden, L., and Dietz, W. (2019). "The Global Syndemic of Obesity, Undernutrition, and Climate Change: *The Lancet Commission report", The Lancet Commissions*, 393(10173): 791–846. Available at: Link

10. (BEUC) The European Consumer Organisation. (2024). *Farm Animal Welfare: What Consumers Want*. Brussels: BEUC. Available at: Link

11. Tachie, C., Nwachukwu, I., and Aryee, A. (2023). "Trends and innovations in the formulation of plant-based foods", *Food Production, Processing and Nutrition*, 5. Available at: Link

12. Hamad, A. and Tayel, A. (2026). "Food 2050 concept: the trends that shape the future of our food", *Journal of Future Foods*, 6(6): 1053–1066. Available at: Link

13. Parodi, A., Leip, A., De Boer, I., Slegers, P., Ziegler, F., Temme, E., Herrero, M., Tuomisto, H., Valin, H., Van Middelaar, C., Van Loon, J., and Van Zanten, H. (2018). "The potential of future foods for sustainable and healthy diets", *Nature Sustainability*, 1: 782–489. Available at: Link

14. Hundscheid, L., Voigt, C., Bergthaler, D., Plank, C., Wurzinger, M., and Melcher, A. (2024). "Policy mix for the sustainable protein transition in Austria – Addressing repercussions of regime shifts as a prerequisite for acceleration", *Environmental Innovation and Societal Transitions,* 51. Available at: Link

15. Health Council of the Netherlands. (2023). *A healthy protein transition.* The Hague: Health Council of the Netherlands. Available at: Link

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