

LIKE-A-PRO Project

Acceptance of Alternative Proteins Among European Consumers

Target Group

Academia

Introduction

High-quality protein is crucial for health, weight management, metabolism, and healthy aging. Yet, the more traditional sources of protein, namely meat and dairy production raise significant socio-economic and environmental concerns.¹ Hence there's a need for alternative proteins such as plant-, fungus-/mushroom-, and/or insect-based proteins which hold manifold sustainability benefits. Despite the recognised positive impacts, the widespread adoption of alternative proteins among European consumers is not quick nor large enough in scale to meet the needed sustainability transition. Understanding the factors at play – both at the individual and food system environment level – that limit or enable the prevalence of alternative proteins is crucial in catalysing (mitigate the limiting and exploit the enabling) the much-needed shift.

The following summary illustrates the key insights of a series of studies conducted as part of the LIKE-A-PRO project. These studies address different factors, both enabling and limiting, that influence the uptake and acceptance of alternative protein sources in our diets. The factors are clustered using the COM-B model² which covers both factors close to the individual (capability and motivation) as well as those external to individuals (opportunity). Insights are also clustered by demographic factors such as age, gender, education, income, and geographical location. On the basis of the compiled insights, this summary concludes with some key recommendations to industry players on how to promote and mainstream the consumption, and by default, the production of alternative proteins in Europe, as well as foster the transition towards a sustainable and good life for all.

Enablers and Barriers of the Acceptance of Alternative Proteins

The table below summarises the findings on the enablers and barriers to the uptake and acceptance of various alternative protein sources and products. The insights stem from a review of existing literature conducted as part of the LIKE-A-PRO project^{3,4,5}. A determinant has been linked to an alternative protein source where and when information was found in the reviewed literature. This is not exhaustive due to the specific approaches in our research process. For more information on the methodological approaches, please have a look at the original reports listed in the footnote section (3 & 4).

	Enablers	Barriers
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¹ EAT. (2022). Healthy diets from sustainable food systems. Food planet health. Summary report of the EAT-Lancet Commission. EAT.

² Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, 6, Article 42. <https://doi.org/10.1186/1748-5908-6-42>

³ Zaleskiewicz, H., Luszczynska, A., Kulis, E., Siwa, M., Szczuka, Z., Banik, A., Grossi, F., Nystrand, B.T., Samoggia, A., Chrysochou, P., Perrea, T., Krystallis, A. (2023). D1.1. Alternative protein integration in EU diets. LIKE A PRO project.

⁴ Zaleskiewicz, H., Kulis, E., Siwa, M., Szczuka, Z., Banik, A., Grossi, F., Chrysochou, P., Nystrand, B. T., Perrea, T., Samoggia, A., Xhelili, A., Krystallis, A., & Luszczynska, A. (2024). Geographical context of European consumers' choices of alternative protein food: A systematic review. *Food Quality and Preference*, 117, 105174. <https://doi.org/10.1016/j.foodqual.2024.105174>

⁵ Zaleskiewicz, H., Kulis, E., Siwa, M., Szczuka, Z., Banik, A., Grossi, F., Chrysochou, P., Nystrand, B. T., Perra, T., Samoggia, A., Xhelili, A., Krystallis, A., & Luszczynska, A. (2024). Characteristics of built food environments associated with alternative protein food choices: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 21, 58. <https://doi.org/10.1186/s12966-024-01606-6>

<p>Capability</p>	<ul style="list-style-type: none"> • Familiarity with alternative protein products (<i>applicable to general, plant, fungus/mushroom and insect-based proteins</i>) as well as cooking skills (<i>applicable to general and plant-based proteins</i>) • Easiness to replace conventional food products with alternative ones (<i>applicable to general, plant, fungus/mushroom and insect-based proteins</i>) • Labels and information indicating ingredients and origin (clean and local / regional sources) (<i>applicable to general proteins</i>) 	<ul style="list-style-type: none"> • Lack of cooking skills (<i>applicable to general and plant-based proteins</i>)
<p>Opportunity</p>	<ul style="list-style-type: none"> • Increased health literacy as well as general knowledge about the environmental impact of conventional products have moderate and volatile impact on people's acceptance of other sources of protein (<i>applicable to general, plant-based, fungus/mushroom as well as insect-based proteins</i>) • Increased availability and accessibility of alternative products in food environments (<i>applicable to general, plant, fungus/mushroom and insect-based proteins</i>) • Casual and non-routine food environment situations which are linked to curiosity and feeling of adventure (e.g., festivals, restaurants, food markets) (<i>applicable to plant and insect-based proteins</i>) • If insects are invisible in the meal, the name of the insect-based product is ambiguous or deliberately beautified consumers are more likely to eat insect-based proteins (<i>applicable to insect-based protein products</i>) • Positive social and cultural norms, including increased acceptance of alternative protein products among immediate social circles (<i>applicable to general, plant, fungus/mushroom and insect-based proteins</i>) 	<ul style="list-style-type: none"> • Difficulty to recognize alternative protein products and/or find them in food environments (<i>applicable to general and plant-based proteins</i>) • Isolated and/or segregated placement of alternative protein products in food environments (<i>applicable to general and plant-based proteins</i>) • Selling insect-based proteins solely via e-commerce • Perceived incompatibility with local food and/or people's preference for regional / local food, including sources/ingredients (<i>applicable to general alternative sources of proteins</i>) • Labelling plant-based proteins as vegetarian or vegan • Social norms among men and masculinity and related identity built around meat (<i>applicable to general proteins</i>)
<p>Motivation</p>	<ul style="list-style-type: none"> • Perceived nutritional and health value (<i>applicable to general, plant and insect-based proteins</i>) • Good and matching taste, flavour and texture with conventional meat and dairy products (<i>applicable to general and plant-based proteins</i>) • Lower and/or equal prices to conventional products (<i>applicable to general and plant-based proteins</i>) • Presential pro-environmental and generally pro-sustainability attitudes (<i>applicable to general, plant,</i> 	<ul style="list-style-type: none"> • Simultaneously, off flavour and unpleasant texture can inhibit the uptake products based on alternative sources of protein • Neophobia as well as unbalanced nutritional profiles and health risk aversiveness (<i>applicable to general, plant and insect-based proteins</i>) • Attachment, positive emotions and routine food behaviours, especially towards meat (<i>applicable to general, plant and insect-based proteins</i>)

	<p><i>fungus/mushroom and insect-based proteins</i>)</p> <ul style="list-style-type: none"> • Pro-animal welfare attitudes (<i>applicable to general, plant and insect-based proteins</i>) • Feeling adventurous, daring, excitement accompanying sensation-seeking as well as curiosity (<i>applicable to general, fungus/mushroom and insect-based proteins</i>) 	<ul style="list-style-type: none"> • Perceived unsafety of food production and handling (storing, maintenance) at the upper part of the value chain (<i>applicable to general, plant and insect-based proteins</i>) • Distrust towards high technologically processed food (<i>applicable to general and insect-based proteins</i>)
Other demographic factors (e.g., age, gender, education, income, geographical location)	<ul style="list-style-type: none"> • Women, people of younger ages as well as those with higher income levels showcase more positive attitudes towards <i>general and plant-based proteins</i> • Higher education level is correlated with positive attitudes towards <i>general and plant-based proteins</i> • Older consumers are more likely to buy <i>insect-based proteins</i> if they are sourced locally while as younger ages and people with higher income seem to be more accepting of <i>insect-based proteins</i>, regardless of their source • Men have a tendency to be more accepting of <i>insect-based proteins</i> • People living in urban areas exhibit increased curiosity towards <i>general and plant-based</i> alternative sources of protein. 	<ul style="list-style-type: none"> • Simultaneously, men most likely to avoid alternative sources of protein, especially if among peer (as seen above due to social pressure)

Recommendations for Action

Research and Development: Universities should invest in research initiatives focused on alternative proteins, including studies on nutritional content, sensory characteristics, and sustainable production methods. Connecting with industry partners and civil society organizations, they can conduct comprehensive system analyses to identify effective and sustainable ways to integrate alternative proteins into the food system. Interdisciplinary research approaches can consider social, environmental, and economic factors, providing valuable insights to inform decision-making processes for stakeholders at various levels.

Public Awareness and Education: Utilize university resources to raise public awareness about alternative proteins through seminars, webinars, and community outreach events. Engage the broader community in discussions about the benefits of alternative proteins, fostering understanding and acceptance. Additionally, establish educational programs that disseminate knowledge about alternative proteins, covering nutritional benefits, environmental impacts, and sustainable production methods. These programs can include public forums and lectures, workshops, and informational campaigns aimed at increasing awareness and understanding of sustainable food systems.

Student Engagement and Curricula Diversification in Alternative Proteins: Implement a comprehensive approach to engage students in alternative protein initiatives. This involves integrating alternative protein topics into relevant academic programs such as nutrition, food science, agriculture, and environmental studies, through courses, workshops, and practical sessions. Additionally, collaborate with campus dining services to incorporate alternative protein options into meal plans and cafeteria menus, while organizing tasting events or cooking demonstrations to expose students to new food choices and encourage experimentation. Support student-led initiatives focused on alternative proteins or advocating for sustainable food practices, by providing funding or resources. This holistic

approach empowers young leaders to drive change within their communities while fostering awareness and acceptance of alternative proteins.

Stakeholder Participatory Research: Develop an integrated collaborative approach to promote the adoption of alternative proteins by implementing stakeholder participatory research processes. Implement collaborative research processes within university initiatives on alternative proteins, engaging diverse stakeholders such as students, faculty, industry representatives, farmers, consumers, and sustainability experts. By actively involving stakeholders in participatory research processes, universities ensure that the development and integration of alternative proteins are aligned with the needs and preferences of various stakeholders across the food system. This collaborative approach facilitates knowledge exchange, innovation, and collective action to drive positive change in the adoption of alternative proteins.

Policy Advocacy and Outreach: Work with government agencies and participate in public policy discussions to co-develop policies that incentivize the production and consumption of alternative proteins. Engage civil society organizations in policy advocacy and outreach activities aimed at promoting supportive policies and regulations for alternative proteins. Partner with industry stakeholders to advocate for corporate policies that support sustainable practices and the inclusion of alternative proteins in product offerings. Engage with international organizations and networks to promote global policy frameworks that support the adoption of alternative proteins. By pooling expertise and resources, universities can provide research-based evidence and technical expertise to generate innovative solutions and contribute to evidence-based policymaking and advocacy efforts, supporting civil society and industry efforts in influencing policy decisions and shaping public discourse on alternative protein issues.

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