

Research and Innovation for alternative proteins sources to develop sustainable agricultural and food systems in European Countries

MISSION, VISION, SCOPE & OBJECTIVES

MISSION: To provide strategic advice on R&I for protein production and consumption to foster alternative sources and support the development of sustainable agricultural and food systems in Europe ensuring both food and feed sovereignty while enhancing environmental, dietary and socio-economic resilience.

VISION: A future European food system that is sovereign, resilient and sustainable grounded in a balanced diversification and coexistence between traditional and alternative protein sources. This system will integrate different production practices, circular bioeconomy principles and dietary transitions to promote health, biodiversity, and reduced environmental impacts.

SCOPE & OBJECTIVES

Alternative sources of proteins concept in the scope of this Task Force align with the EU Farm to Fork Strategy approach: *other than conventional sources of proteins such as meat and dairy* (livestock-based) *or mainstreamed from classical crops* (classical plant-based). It includes, therefore: plant (non-classical), micro-organisms, insects, cultured meat, marine feed stocks and by-products from the bio-economy

SCAR Protein Task Force aims to approach the protein sources from an **integrated perspective of the food system**. In the development of sustainable agriculture and food systems in Europe, two interconnected but independent dimensions are considered:

- The sustainability of **agricultural systems** in the European territory
- The sustainability of the **diet** of the European population

From this **double dimension**, this working group will aim to adopt a **systemic approach to food system**, starting from dietary aspects and macroeconomic and social aspects to think about possible transition scenarios, taking into account **all protein sources** for food and feed, their evolutions and consequences: R&I in socio-economics and nutrition would be preferential entries, with a focus on environmental and health impact.

Strategic Objectives

- Address the question of **European food and feed sovereignty** through research on alternative proteins and/or encourage of the regionally produced proteins, independence (from imports) and resilience of proteins in food systems
- Have a **holistic approach** of proteins in the framework of food systems in Europe and their overall sustainability, but also taking into account the **consequences for other countries** (special mention to Africa, a strategic priority for Europe partnership)
- Keep in mind the **alternative vision on the future of agriculture and nutrition** these different options for new (or re-discovered) protein sources could represent: potential for feeding an increasing human population
- Explore the alternative protein sources in the context of the **future of primary production and related issues** (GHG emissions, use of pesticides, nutrition, N cycle, circularity, C sequestration, biodiversity, etc.)
- Gather **Member States' positions** on alternative proteins and **comparison of national plans** implemented in order to have a **shared position**
- Put emphasis on the **consumer's health, quality of life (one health approach), nutrition and wellbeing** (not only agriculture and environment aspects)
- Secure the food systems on proteins by considering both alternative and traditional sources in a potential food transition approach based on **co-existence** and **diversification**:

- Address the challenge of the **co-existence** between livestock-based proteins and other protein sources to help meet future protein requirements in a sustainable manner
- Recognizing the value of livestock-based proteins (meat, eggs and dairy), but tackling the environmental and health and issues related with their production and overconsumption through **diversification** of the diet (alternative sources of proteins)

Questions / Issues to address

- What is the **current situation** of the production and consumption of proteins of different origins in Europe? Analyse the situation in relation to: Europe's food sovereignty; Sustainability of the European and global food system; Climate protection (GHG emissions, C sequestration); Adaptation/mitigation of the entire agricultural and food system to climate change and environmental challenges; Nutrition; Innovation needs and barriers
- What would be the **pathway for the European protein sector in 2050**? What implications will the EU imports regulations have? How to **organize the transition** of the protein sector in Europe from a diversification approach? How much cultivated land would be assigned to protein plants for direct human consumption? Try to agreed and adopt a *Strategic European concept* on the proportion of plant protein for feed and food: What is the impact on production area, crop diversity and cultivation gaps?
- What is the **economic profitability** of protein crops cultivation for farmers compared to other options? Analyse the economic impact on producers who bet on diversification, due to the shift towards plant proteins. Address **also ecological and social values**, considering the added value in the entire crop system: follow-on crops (N supply), neighbouring crops (pollinators, natural enemies, etc.), ecosystem services, etc. Act in a **responsible way** with respect to environmental concerns, trade and agro-economies outside the EU, to prevent crisis on exporting countries
- What implications will alternative protein have for **rural development**? The establishment/development of alternative protein sources based value chains have effects on the local/territorial level, in terms of diversification of farming, business models and income opportunities. In this view, it could be interesting focus on R&I, especially plant-based protein sources, for a **sustainable agriculture**, with special attention to small scale farmers/processors and local circuits. Promote **adapted and short supply chains** to process, pack, transport, storage and market the new plant protein products. **Improve circularity** in doing so
- What impact could the protein transition have on **global food systems**? Identifying and preventing possible impacts of EU transitions on producing countries, exporting to Europe (to be inclusive, leaving no countries behind). Special mention to Africa, a strategic priority for Europe partnership
- What are the **technical barriers** to be removed or the **technical drivers** to be implemented in order to develop or encourage the production of different alternative proteins, primarily plant proteins, especially from seed legumes? Genetics and cropping practices up to food technologies and marketing
- In what forms should alternative proteins (particularly plant-based proteins) be made available to consumers? **Study the market penetration and consumers' behaviour** to accept meat replacement proteins in connection with the knowledge of the different types of consumers and their expressed needs: acceptability in terms of understanding, perception, habits and culture, practicality of use, taste and nutritional quality, etc. In this aspects, consider the relevant **role of innovation** and new ways and opportunities for industry sector
- In terms of economy and public policies, what **incentives or regulatory measures** should be taken to **promote** the emergence of value chains based on plant proteins and to **encourage the consumption** of their products? Is there a need for a better sectoral coordination (relations between actors)?
- In the face of **crises**, what is the role and relevance of protein sources? What can be done in the short/medium/long term? What aspects of plant-based proteins will help: storing capacity, quality control? How to **secure EU protein production** in the face of **short/medium term climatic hazards**? And in the face of **long-term climatic changes**?
- How to better exploit the diversity and heterogeneity of the European conditions to **develop the production of protein** resources and to make it **resilient** to diseases, constant yield and quality and legume fatigue or better **adapted to climate change**. Consider the role of **genetic improvement for crop breeding** for different climatic areas in EU but also for **anti-nutritional components** (e.g.: allergens) and other aspect specific for use as food (e.g. baking properties). Ensure the production and supply of seed for sowing to producers

Potential areas of interest

- Improve/develop **general knowledge** and digital information on alternative uses of protein sources
- **Exchange knowledge** and project results for better coordination and alignment
- Facilitate **international collaborations** (e.g. project proposals)
- Address the **potential of domestic crops** to reduce dependence on imported proteins crops for food/feed
- Improve new proteins production and consumption in terms of **diets and sustainable transition**
- Improve **agricultural practices** that may benefit from R&I on proteins. Align with agroecological transition
- Assess impacts on **human health and bioavailability** of alternative versus conventional protein sources
- Assess the **agricultural and socio-economical impact of diets shift** towards more diverse protein sources
- Assess **environmental footprints/performance** of alternative protein foods
- Enhance **better use of food environments**, link food supply and diets for the proteins diversification
- Analyse **food safety** of novel food based on alternative proteins from the fields (plants especially)
- Compare the **nutritive/nutritional quality** of various sources of proteins
- Explore **other alternative protein** opportunities (novel crops, green biorefinery, macroalgae)
- Address the potential to **broaden the seafood product** range and develop seafood protein leadership
- Consider **biorefineries's role** to aid value chain, circular business models and zero-waste approaches

Tasks-based Operational objectives

Review and analysis of the **policy framework** concerning new proteins use and development in Europe.

Mapping and review of the **state-of-the-art (SoA) in R&I** for new protein sources to develop sustainable agricultural and food systems in EU. Portfolio analysis (potential support of SCAR tender) could be performed. Mapping in the ERA countries, with attention to both food and feed production (and focus on primary production) could address:

- Best initiatives and practices, also beyond EU borders
- Standards and regulations, analysis of consumers' acceptance
- Policies and strategies
- SoA towards a European strategy for alternative protein sources (contribute to this discussion and possibly support an inclusive process)

Identification and assessment of **Gaps and Needs for R&I** for the development/application of new protein sources for sustainable agricultural and food systems in the EU. Contribute to identifying research needs, or validate the current knowledge, for the development of the plant protein sector in the EU, which is fundamental in the frame of the current global situation and food security, by reducing the dependencies on imported agricultural products as well as agricultural inputs such as fertilizers.

Provide advice and support to the **EC** for/by:

- Assess and align R&I with the Farm to Fork strategy overall goals and strategy targets
- Identify Gaps in Knowledge and Needs for R&I in the context of the three SFS dimensions
- Identify drivers and barriers of dietary choices, provide knowledge/recommendations to stakeholders
- Provide recommendations for alignment the EU and national R&I agendas
- Suggest guidelines for co-creation strategies, multi-actor R&I governance
- Suggest initiatives to deliver co-benefits in line with the European Green Deal
- Provide inputs for potential SCAR position paper or policy brief drafting