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EXCEUTIVE SUMMARY

EATrends 2025-2027

by AZTI

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Trends are

- Drivers of change and transformation
- Present-day signals pointing toward future developments
- Relevant to both society and business
- Insights for medium- to long-term strategic vision
- Knowledge that powers effective business strategy and innovation
- Tools to boost competitiveness: adapt to or anticipate change in an ever-evolving landscape
- Inspiration to uncover new opportunities

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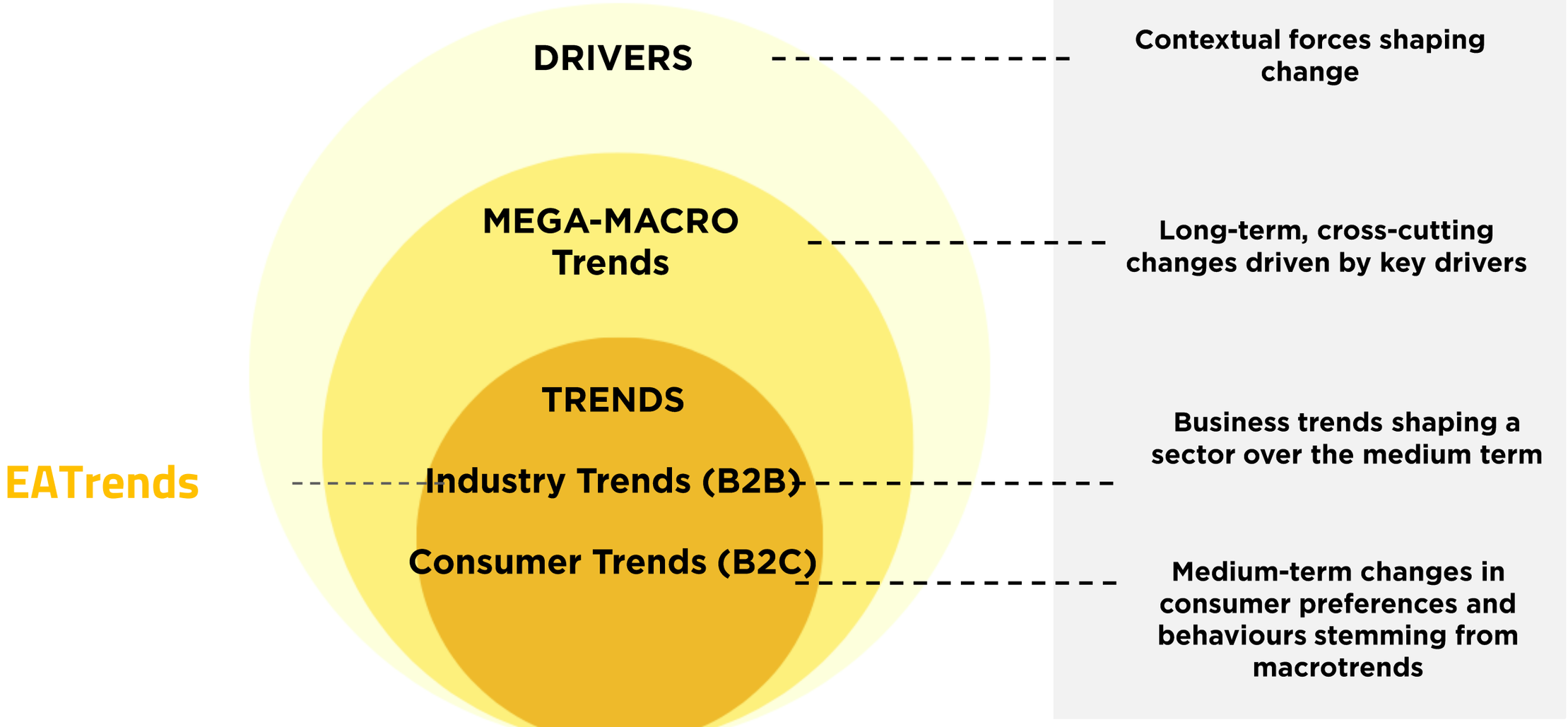
Trends Framework



What does EATrends offer you?

EATrends connects society, business, science, and technology. It provides:

- Keys to understanding a constantly shifting context and sector
- Insights to identify current and emerging social needs and behaviors
- R&D&I highlights showcasing the critical role of science in generating new knowledge and technologies that drive innovation and transform food
- Solutions from companies delivering innovative responses to social demands

EATrends by AZTI reflects our expertise in science and technology, deep knowledge of the food sector, our innovation ecosystem, key actors across the food value chain, and our consumer research.
AZTI leads the Trends segment of the EIT Food Consumer Observatory, the scientific hub for consumer research within Europe's largest food innovation initiative.

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Context

Context: Forces shaping the future of food

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Change *drivers* map

Long-term forces currently observable with a significant impact on the future: major trends influencing various aspects of society, policy, or consumption.

LIFESTYLE SHIFTS_

- Work-life balance, digital lifestyles
- Growing awareness of healthy and sustainable habits
- Holistic well-being and rising mental health concerns
- Demand for personalization
- Social media activism
- Diversity and inclusion
- Information crisis
- Changing consumption patterns
- Erosion of social cohesion

ENVIRONMENTAL PRESSURES_

- Climate change and resource scarcity
- Natural disasters and extreme weather
- Climate migration
- Biodiversity loss and ecosystem collapse risk
- Energy crisis and transition (renewables, fossil-free energy)
- Circular economy and green technologies
- Emerging alternative proteins
- Sustainability-related regulations (soil health, nature restoration, deforestation, renewables, greenwashing, food waste, etc.)

SOCIOECONOMIC CHANGES_

- Slowing global economic growth and rising debt levels
- Supply shortages and/or rising costs
- Tariff changes
- Rising and/or sustained inflation and cost of living
- Increasing income inequality: polarization of social classes
- Growing food insecurity
- Power struggles and big business
- Changes in the labour market and workforce

DEMOGRAPHIC IMBALANCES_

- Population growth
- Ageing population and declining birth rates
- New household structures: changes in family dynamics
- Rapid urbanization
- Mass migration
- Diversity: cross-cultural influence

GEOPOLITICS_

- Rising instability and geopolitical conflicts
- Competition for resources
- Armed conflicts
- Shifting constellation of powerful players: emerging powers (the rise of Asia)
- Trade tensions (protectionism) and restructuring of global supply chains (localisation)
- Political fragmentation
- Democracies under threat

TECHNOLOGICAL DISRUPTION_

- Hyperconnectivity (digital access, 5G, IoT)
- AI and machine learning
- Robotics and cybersecurity challenges
- The power of data and its regulation
- Technology-driven consumer experiences (e-commerce, retail digitalization)
- Wearables and monitoring devices
- Biotechnology
- FoodTech revolution (precision fermentation, omics)

LEGISLATION, STRATEGIES, POLICIES_

- Regulations related to sustainability: soil health, nature restoration, deforestation, renewable energy, greenwashing, food waste, etc.
- Novel foods: alternative proteins, cultivated meat...
- Regulations on artificial intelligence, data, and cybersecurity
- Ethical and social regulations: forced labour, animal welfare, asylum and migration, mental health
- Regulations on packaging and food contact materials; microplastics
- New food risk assessments: emerging risks

Essential for understanding the context in which the food industry is evolving and will continue to evolve in the coming years.

Key Challenges for the Food Sector

- Feeding the growing global demand for food, an ageing European population, and expanding urban populations in an equitable, sustainable, and healthy way.
- Maintaining the competitiveness of food production and sustaining demand in the face of price volatility, rising resource costs, the availability of raw materials, and access to adequate nutrition.
- Using natural resources more efficiently and sustainably, tackling the effects of climate change and environmental degradation on food production, improving sustainability, and reducing the sector's environmental footprint to contain rising production costs.
- Addressing the emergence of new risks that could affect food safety and threaten public health.
- Introducing technological infrastructure and skills, adopting emerging technologies, and protecting and managing business and consumer data within an unclear regulatory and ethical framework to avoid hindering innovation and competitiveness.
- Protecting the food system from cybersecurity attacks, potential biological warfare, and bioterrorism to prevent supply chain disruptions, food safety alerts, and loss of consumer confidence.
- Diversifying supply sources and exploring alternative markets to mitigate the impacts of tariffs and trade protectionism.

En 2040 España alcanzará a Japón como el país más longevo del mundo
The Lancet

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Social demands are constantly evolving

Values, lifestyles, and social behaviours are shifting, influenced by anxieties over climate change, economic uncertainty, security concerns, and the rise of technologies such as AI.

Essential spending is prioritised, with health as a notable exception. It has become a key driver of behaviour and social change.

In a context of chaos, change, and a certain degree of pessimism, people long to reconnect with themselves, becoming more reflective, mindful, and responsible.

TRUST

Do people trust what they eat?

- Trust under suspicion
- Who to believe
- Credibility and verified claims
- (Technological) innovation and ethics

SUSTAINABILITY

Are we really dealing with a "gree consumer?

- Said, but not done
- Affordable sustainability?
- Demand for corporate action

SOCIAL

Demand for responsible businesses.

- Focus on values
- Change activists
- Diversity, equality, and inclusion
- Co-responsible consumption

ENTERTAINMENT

Room for indulgence?

- Beyond nutrition
- Guilt-free pleasure
- Technology enhances the experience

HEALTH & WELLBEING

A new lifestyle

- Healthy longevity
- Diversifying the diet
- Nourishing body and mind
- Personalised nutrition — within reach?

TECHY

The new era of the hyperconnected consumer

- Increased expectations for personalization
- Making life easier
- Friendly technology
- New models of interaction and sales

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R&D

Science and technology driving innovation

Technology reshaping food

Technological innovations are not only improving the efficiency and sustainability of production, but also redefining the relationship between food and human health.

- **Biotechnology:** driving innovation at the intersection of diet and health, enabling advances in microbiome research and precision nutrition.
- **Automation and robotics:** transforming production — from precision agriculture to logistics — improving efficiency and reducing environmental impact.
- **Precision fermentation:** reaching its peak and promising to meet the demand for alternative proteins in a more sustainable way.
- **Cellular agriculture:** widespread adoption remains distant, facing challenges around costs, scalability, and consumer acceptance.
- **Blockchain:** enhancing transparency and traceability in supply chains, ensuring product authenticity, and reducing the risk of fraud.
- **Multi-Omics:** genomics, proteomics, and microbiomics accelerating the development of more resilient crops, improving food safety, and enabling new food formulations aligned with health and sustainability goals.
- **Quantum computing:** poised to boost key aspects of food systems, such as improving climate forecasting and accelerating the development of alternative proteins.
- **Artificial intelligence:** enabling food safety and quality control through predictive analytics, personalising nutrition and consumer experiences, enhancing precision agriculture and crop yields, predicting supply chain disruptions, and reducing waste.

Science feeding the future

In the R&D kitchen, progress is being made in...

- **developing crops resistant to extreme climate conditions**, and using genetic engineering to enhance crop yields, nutritional value, and resistance to pests and diseases;
- **creating new biosolutions for agriculture and rapid detection systems for contaminants**;
- advancing alternative ingredients that are more sustainable and healthier, packaging biomaterials, upcycled by-products, and biotech-based products;
- producing **alternative proteins** through AI, harnessing the potential of fermentation technology, and exploring new protein sources such as **microalgae**;
- applying **biotechnology, genomics, and bioinformatics** to enhance the exploration and exploitation of marine organisms, and to discover new bioactive compounds;
- deepening understanding of the link between **gut health**, brain function, emotions, metabolism, and the role of diet;
- pushing the frontiers of **nutritional epigenetics and biohacking** to improve health through food and lifestyle.

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EATrends

The framework of trends impacting the food value chain

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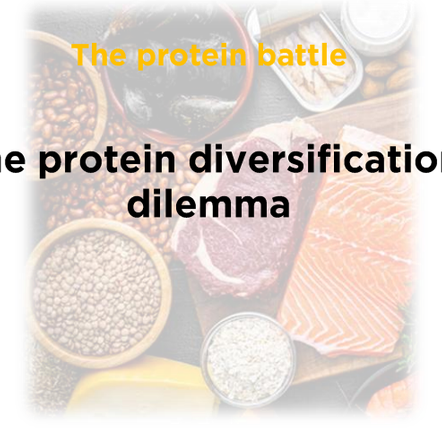
Trends shaped by environmental drivers, scientific and technological advances, and shifts in social demands and behaviours, which are having — and will continue to have — an impact on the food sector in the medium term.

Cultivating resilience

Climate-resilient food systems

Seeking alternatives

New sustainable and healthy products and ingredients



The protein battle

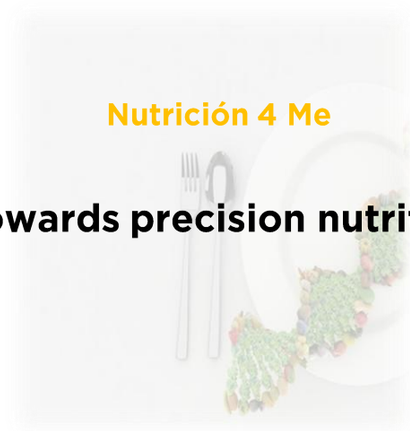
The protein diversification dilemma

A sea of food

The oceans, a source of healthy food

Feeding wellbeing

The food and health partnership



Nutrición 4 Me

Towards precision nutrition

Simple and clear

Trust and transparency

Food (IN) Security

Accessible and safe food

Essential for understanding how they will shape the food business and consumer behaviours in the years ahead

EATrends Highlights

- Food systems must have the capacity to **adapt** to and **recover** from the impacts of climate change while also contributing to mitigating its effects, reducing vulnerability, and maintaining their functionality and sustainability.
- Growing social awareness around **food waste** is driving interest in products with longer shelf lives or alternatives that avoid ethical and environmental issues while offering better nutritional benefits.
- The **alternative market** is expanding, with challenges to reach the market and still gain consumer trust in terms of health, sensory qualities, or environmental aspects.
- The **demand for protein continues to rise,** and alternative proteins are gaining popularity, while also facing the challenge of being competitive in terms of taste, texture, and price.
- "**Blue foods"** are emerging as one of the major promises of healthy and sustainable food reserves, still with untapped potential.
- Ensuring access to dignified, **healthy, and safe food** is one of the sector's main challenges in the face of rising and unstable prices.
- **Emerging risks** could affect food safety or proper nutrition.
- The adoption of **healthier lifestyles with nutrition at the core**, especially focusing on the gut-brain axis, is on the rise, while demand for personalized functionality increases and sensitivity toward ultra-processed foods grows.
- **Personalized nutrition** is still more of an expectation than a reality, with concerns around personal data, cost, or scientific evidence.

Cultivating resilience

Climate-resilient food systems

The ocean and soil are undergoing major transformations due to climate change and extreme weather events. These shifts have significant consequences for ecosystems, trade, the economy, and human consumption.

Moving towards resilient food systems—reducing their vulnerability while maintaining functionality and sustainability, and ensuring they can adapt to and recover from the impacts of climate change while also contributing to its mitigation—is essential.

In a low-emissions scenario (warming of 1.5 to 2°C), biomass is projected to decline by 10% by the end of the century. In a high-emissions scenario (global warming of 3 to 4°C), declines worsen to 30%.

"Climate change risks to marine ecosystems and fisheries", FAO

Next steps

In the R&D&I kitchen, progress is being made on developing crops resistant to extreme climate conditions, deepening the understanding of complex plant-soil interactions, exploring the potential of algae, creating new biosolutions for agriculture, and gathering evidence of the environmental benefits of regenerative farming.

It’s happening

Amid growing social awareness of the need for more sustainable food production and a stronger positive impact on health, local communities, and the planet, the food sector is adopting multiple strategies: regenerative production practices, reducing dependence on chemicals, improving resource-use efficiency, diversifying crops, adapting fishing fleets, and enhancing aquaculture operations.

The NewTechAqua project, funded by the EU, has developed and validated new, advanced, resilient, and sustainable solutions to expand and diversify the production of finfish, shellfish, and microalgae in the EU.

Seeking alternatives

New sustainable and healthy products and ingredients

The alternatives market is gaining momentum as demand grows for products that are “better for me and the planet,” and both consumers and businesses become more aware of the benefits of reducing food waste and the need to minimize the environmental impact of food production.

Both lab-grown alternatives and improved, more nutritious formulations still pose challenges for companies in terms of market entry, building trust, and meeting consumer expectations around health, sensory experience, and environmental impact.

European consumers associate the concept of “upcycled” foods positively with innovation (13.3%), recycling (11.3%), food waste prevention (10.7%), and being good for the environment (9.9%).

Consumer understanding of upcycled foods, Food Quality and Preference

Next steps

In the R&D&I field, more sustainable and healthier alternatives for ingredients, smart technologies, and packaging biomaterials are being developed, while adding value to by-products, and creating new ingredients and biotechnological products.

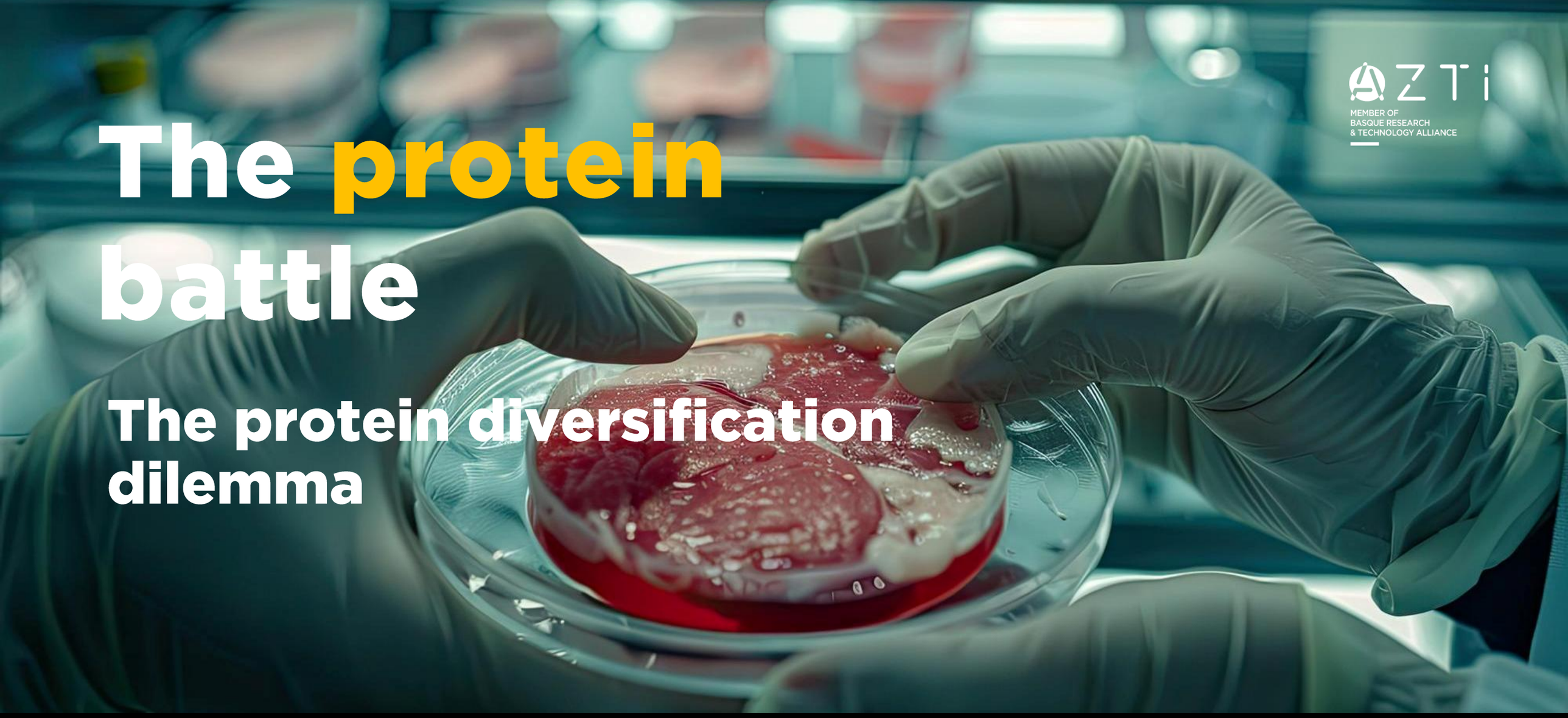
It’s happening

The growing social awareness of food waste is driving interest in products with longer shelf lives or alternatives that address ethical and environmental issues while offering better nutritional benefits. The food sector is responding with "upcycled" ingredients and foods, new packaging solutions, processing technologies, and diversifying raw materials and ingredients.

Researchers from Nanyang Technological University, Singapore, together with Eves Energy , have developed a substitute that could serve as a more eco-friendly alternative to palm oil, made from microalgae.

The protein battle

The protein diversification dilemma



The demand for proteins continues to rise as consumers associate them with various health benefits. A constantly evolving protein market and an increasing diversification of the supply are causing some confusion among consumers.

The popularity of alternative proteins is growing due to their potential health benefits, environmental sustainability, and food security. Governments around the world are investing in alternative proteins, as technology advances and the research and innovation ecosystem continues to expand. A revolution still facing significant challenges to address.

The size of the European animal protein market is expected to reach €2.5 billion by 2029, growing at an annual rate of 4.77%.

Mordor intelligence and Consulting group

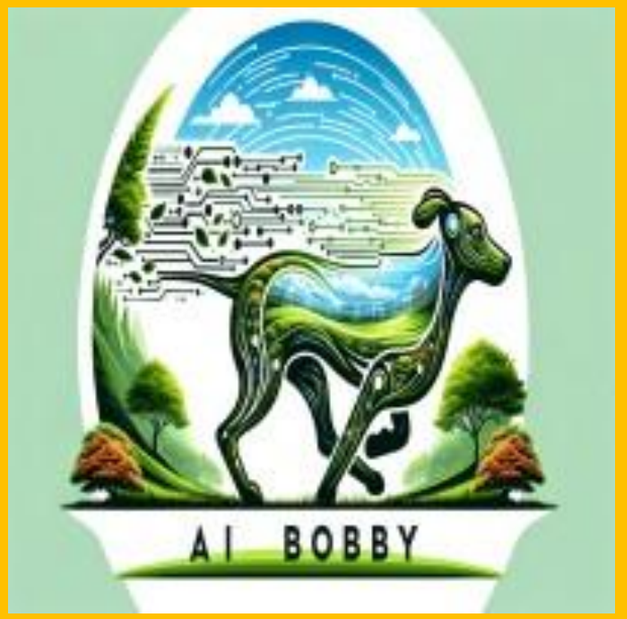
Next steps

Technology is revolutionizing R&D&I around alternative proteins through AI, biotechnological advances, and harnessing the potential of fermentation technology. While some protein sources, such as microalgae, show promising potential as successful candidates for the protein revolution.

New products must first be competitive— in taste, texture, and price— with animal-derived proteins.The challenge lies in how different production pathways— plant-based, cultivated, fermented, or animal-derived— converge to offer enhanced products at a sustainable price.

It’s happening

While concerns over excessive animal protein consumption coexist with doubts and skepticism about plant-based protein, interest in plant-based diets continues to grow. The sector is focusing on hybrid solutions and concepts, diversifying plant-based offerings with new sources of plant protein, and exploring the cultivation of alternative proteins, while also improving livestock production to develop and scale next-generation products.
The future of alternative proteins will depend on the strength of consumer demand for environmentally sustainable alternatives and their willingness to try new things.
New products must first be competitive— in taste, texture, and price— with animal-derived proteins.



AI Bobby uses generative AI to help design and optimize proteins for use in plant-based meat and dairy analogs. This technology can accelerate research, enhancing efficiency and precision in protein design.

A sea of food

The oceans, a source of healthy food

Oceans contribute 60% of the economic value of the biosphere and provide direct livelihoods for over 200 million people. In addition to their economic significance, they are essential for human well-being, playing a crucial role in global health and nutrition.

Oceans are increasingly recognized as an indispensable source for feeding the growing global population, with the potential of so-called "blue foods" to serve as healthy and sustainable food reserves. Given the vast variety of marine organisms, it is reasonable to assume that this potential remains largely untapped.

The global market for marine active ingredients is expected to experience substantial growth, increasing from $9.709 billion in 2023 to $18.058 billion in 2033.

Future Market Insights

Next steps

Advances in biotechnology, genomics, and bioinformatics are enhancing the ability to explore and harness marine organisms, discover new bioactive compounds, and develop innovative bioprocessing techniques. At the same time, encapsulation technologies are improving the bioavailability and functionality of marine bioactive compounds.

It’s happening

There is growing awareness of ocean conservation, alongside increasing demand for natural and sustainable ingredients and recognition of the potential of marine-based foods. In response, the sector continues to invest in fish protein concentrates, the valorization of fishery by-products, new processing proposals, and formats for "blue foods," as well as aquaculture to meet the rising demand.

Oceanium has developed a marine algae bioactive compound as an ingredient for foods, beverages, and supplements, with potential benefits for increasing bacterial biomass (41%) and the species richness of the microbiome.

Food (IN)security

Accessible and safe food

In the current uncertain environment, exacerbated by geopolitical tensions, climate impacts, and a sharp rise in the cost of living, food insecurity has gained special significance, becoming a decisive challenge for the coming decade. Supply chains, threatened by these factors, point to a future of higher prices and greater scarcity, posing a huge challenge for the food industry.

As inequalities deepen, many consumers are choosing to spend more consciously on food, prioritizing affordability. However, this should not compromise access to dignified, healthy, and safe food.

Food and nutrition security is one of the top 8 global challenges to address, mobilizing $45 billion worldwide.

World Bank

Next steps

The development of alternative raw materials, genetic engineering to improve crop yields, nutritional value, and resistance to pests and diseases, precision agriculture, and new rapid contaminant detection systems are some of the scientific and technological advances aimed at combating the growing global "food insecurity."

It’s happening

In response to a cautious consumer facing the relentless rise in prices, who seeks healthy and quality products at more affordable prices, the sector is working to diversify its product lines to meet the challenge of offering affordability and value to consumers. At the same time, special emphasis is being placed on controlling emerging risks that could interfere with food safety or proper nutrition.

El micelio is gaining interest due to its ability to provide sustainable biomass for the production of tasty foods rich in quality proteins, fiber, and essential micronutrients, as well as its potential to combat malnutrition and undernutrition caused by food insecurity and poor diets.

Simple y clear

Trust and transparency

In an increasingly digitalized world, consumers need to trust brands through facts and evidence that help them overcome the existing level of distrust towards the food supply chain.

Transparency and safety, along with a balance between technology and human interaction, are key to building this trust, especially in the areas of personalized nutrition and sustainability.

40% of European consumers do not trust sustainability labels.

EIT Food Consumer observatory, 2024

Next steps

Technological advances such as blockchain and IoT devices are making it possible to take steps towards offering complete traceability. The scientific foundation and big data are providing support and credentials for manufacturers' claims. Advances in smart packaging and labeling are also helping to fuel transparency and satisfy consumers' thirst for information.

It’s happening

Consumers, overwhelmed by information, are looking for simple, verifiable claims and "clean" labels to make informed decisions, expecting tangible proof of sustainability or functional and health benefits. At the same time, they demand greater transparency about the role of ingredients and manufacturing processes.
The food industry is adopting advanced traceability systems, using technologies to connect with the public and communicate transparently, measuring the environmental impact of products, and working towards providing tangible evidence and precise claims.

The French distributor La Bonne Distrib' requires manufacturers to comply with the "simple ingredients" labeling standards set by the Goûm agency in order to be accepted on their shelves.
This agency bans at least 500 ingredients identified in its terms and conditions, which are based on scientific literature.

Feeding wellbeing

The food and health partnership

People are adopting lifestyles that are highly focused on health from a holistic perspective, where the boundaries between health and nutrition are increasingly blurred. The relevance of the latter is highlighted by scientific advancements that support the impact of nutrition on health and demonstrate the convergence of mental and physical health.

The gut microbiome is in the spotlight, due to the growing knowledge and understanding of how it is affected by diet and its impact on mental health, mood, and depression.

In Europe, 47% of consumers take supplements for various health needs, such as immune support, brain health, heart health, or bone health.

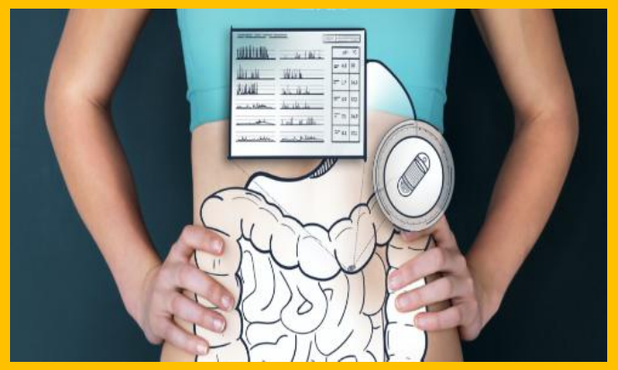
Innova's 360 research, 2024

Next steps

Scientific advancements and the increased understanding of the micro and microbiome will allow for much more precise evaluation of the functionality and impact of nutrients on human health and the gut microbiome. Science is linking digestive health, the brain, emotions, and metabolism, enabling a more balanced approach to managing both physical and mental health. Science is relentlessly advancing towards healthy longevity.

It’s happening

The adoption of healthier lifestyles with nutrition as the main focus, particularly with an emphasis on the gut-brain axis, is on the rise. At the same time, there is growing demand for personalized functionality and increased sensitivity to ultra-processed foods. The industry is responding with greater simplicity, minimally processed options, and more natural solutions, offering ranges of healthy snacks and the inclusion of ingredients with proven functionality aimed at specific health goals, and "naturally functional" products. Meanwhile, efforts continue to provide healthy solutions that combine health benefits, sensory quality, and convenience.



OnePlanet Research Center develops pioneering innovations in nanotechnology and digital technology that help address major challenges in preventive health and early intervention. For example, an ingestible sensor to measure gut health and its relationship with diet.

Nutrición4Me

Towards precision nutrition

Personalized nutrition is set to be the future of the health and nutrition industry, driven by the growing accessibility of personal data and consumers' demand to take control of their health.

The science behind personalized nutrition is advancing, allowing for a more effective approach to human health through nutrition. This, in turn, aligns with the demand for personalized nutritional solutions backed by scientific foundations.

The size of the European sports nutrition market is expected to increase by $4.54 billion, with an annual growth rate of 9.6%.

Technavio, 2024

Next steps

Advancements in fields such as omics technologies are driving significant progress in understanding the interaction between food and health. Cutting-edge areas like nutritional epigenetics and biohacking are also being explored. These technologies will help improve the efficiency of data collection and the monitoring of health parameters and dietary intake.

It’s happening

There is growing interest and belief in using diet to treat or prevent health issues, as well as in gathering personal information to identify changes in lifestyle. Personalized nutrition is still more of an expectation than a reality, with concerns surrounding personal data, cost, and scientific evidence.
The connection between food and technology is increasing, with the food industry cautiously moving towards personalization, offering diagnostic services and supplementation solutions. Technology companies are driving this trend, with increasingly affordable diagnostic kits that allow consumers to better understand their unique metabolism and microbiome.

The European project PREVENTOMICS has created a new paradigm in personalized nutrition strategies based on multi-omics data, paving the way for more accessible precision nutrition. It integrates genetic, nutritional, and psychological data with metabolomic technologies and computational modeling to assess the impact of disease-inducing factors on the body.

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Hungry for more?

Trends are just the starter...
you'll want a second course

Knowledge in action

Hungry for more on trends—who's leading them, what innovations are emerging, and which consumer segments are driving them?

Interested in exploring how these trends impact your business, and what challenges and opportunities they bring?

Keen to explore the future? To discover the scientific and technological innovations that will transform the sector and help you stay ahead of what's coming?

Get in touch and we'll introduce you o EATrends for successful innovation

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