Údarás Sábháilteachta Bia na hÉireann
Food Safety Authority of Ireland

2026–2030

Science Strategy

Building capability, advancing food safety outcomes

Science Strategy 2026–2030

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Foreword

This science strategy is a supporting pillar of the Food Safety Authority of Ireland (FSAI) corporate *Strategy 2025–2029*. The previous two science strategies have created a firm foundation for the FSAI as a science-based organisation, and it is now time to build on that work. This, our third science strategy, has been shaped by collaboration, analysis, and the shared vision of our dedicated experts and stakeholders. It will guide us through the coming years as we strive to anticipate emerging risks, leverage innovation, and ensure the highest standards of public health protection. I would like to express my appreciation for the dedication and enthusiasm of the Science Strategy Development Team, whose work has resulted in this blueprint for the future.

The goals set out in this document, while ambitious, are achievable and are aimed at fostering a culture of scientific leadership, transparency, and adaptability. From the application of cutting-edge technologies to the cultivation of knowledge-sharing networks, this science strategy places science at the heart of our decision-making.

I am confident that the Science Strategy 2026–2030 will strengthen our ability to meet the needs of a diverse and dynamic food system while ensuring the safety and trust of the communities we serve.

Dr Wayne Anderson,

Director, Food Science and Standards

External influences on science in the FSAI

Science is an important pillar that will enable the FSAI to meet its strategic purpose over the next 5 years. Our stakeholder engagement identified many factors that may influence the application of science within the FSAI and shape its direction.

Political and economic factors

Lower disposable income levels and increased inflation rates may result in additional financial pressures on food businesses and consumers. The subsequent cost-cutting measures implemented by businesses, such as sourcing cheaper ingredients from less reputable sources, may compromise hygiene and training standards or traceability, which in turn may result in an increase in the associated food safety risks. Consumers may seek cheaper alternatives or accept lower safety standards if a business is providing more affordable (but higher-risk) food. Scientific research and analytical methods strengthen the FSAI's capacity to identify risks in order to protect consumers' health; such safeguards are particularly relevant in the case of food business operations that are more vulnerable to economic shocks.

The FSAI needs to be cognisant of domestic policies such as the Programme for Government, which determines national priorities and therefore may impact on the Authority. For example, the FSAI has a service level agreement with the Department of Health to implement the Food Reformulation Roadmap for Ireland. Public health policies will also inform our work (e.g. new obesity and breastfeeding policies) as will European Union (EU) policies such as the Farm to Fork Strategy. Both the national and international policy movement towards green and sustainable innovation may require the FSAI to assess increased levels of novel food technologies or sustainable packaging for food safety risks.

Geopolitical factors can have significant impacts on food safety. For example, trade disputes such as tariffs can affect supply chains and result in rapid changes to previously well-established and controlled supply chains; these rapid or unpredictable changes may result in challenges in appropriately and promptly assessing associated food safety risks. Similarly, international conflicts and wars can introduce new food safety risks; such risks may include contamination or fraud and disruptions of supply chains, which would require rapid scientific and regulatory responses to ensure consumer protection. These factors may also contribute to a shift in well-established import/export patterns.

Social factors

Changing consumption patterns, diversification of food choices, food trends and consumer behaviour are social factors that will influence the work of the FSAI. Furthermore, demographic shifts such as an ageing population will result in a greater proportion of the population being vulnerable to food safety threats. It is important that the Authority employs social and behavioural science to understand these changing societal characteristics and inform the FSAI's evidence base. Consumer purchasing via the internet (e-commerce) is a priority area for the Authority as this allows consumers to purchase a much wider and therefore potentially 'riskier' range of food products, including food supplements. Finally, the rise in non-communicable diseases such as obesity, cardiovascular disease, diabetes and cancer informs the work of the FSAI in terms of its remit to protect consumers' health.

Technological factors

As the central competent authority in Ireland for the enforcement of food law, the FSAI must be cognisant of the time lapse that exists between adoption of new technologies by the food industry and the development or amendment of legislation to enable regulation. Artificial intelligence (AI) is being implemented across the food industry to increase efficiency, grow businesses as well as support food safety by predicting foodborne illness outbreaks, automating inspections, and analysing data. Blockchain technologies are being implemented to enhance traceability and transparency in supply chain management, and to reduce administrative costs. While the implementation of these and other emerging tools and technologies may offer many benefits to the food sector, as a science-based regulator the FSAI must develop scientific frameworks to validate these technologies and ensure they meet regulatory standards. The FSAI must always ensure consumer protection and legislative compliance. Such issues can be challenging as the food industry often adopts innovations faster than legislation evolves. This in turn creates a gap where new processes (e.g. lab-grown meat, smart packaging) operate in a regulatory grey zone. The FSAI must anticipate these changes and developments and provide the scientific evaluations necessary to support risk management.

Legal factors

Implementation of new and amending food laws, particularly EU legislation, can result in a requirement for additional scientific skills to be obtained by the FSAI. It can also result in changes to the approach taken to the regulatory science that supports official control oversight of compliance. In addition, the impact of differing food safety regulatory landscapes in other jurisdictions such as the United Kingdom (UK) may be based on differences in risk assessment,

thus requiring robust scientific systems in the FSAI to support differences of opinion. The FSAI must monitor third country developments, assess scientific equivalence, and ensure that imports meet EU safety standards.

Environmental and sustainability factors

The food system is heavily impacted by changes within the natural environment that includes ecosystems and biodiversity. Climate change affects the entire food system through changes in temperature, precipitation, sea levels, and extreme weather events. These climate-mediated changes subsequently impact on food system outcomes such as food security and environmental sustainability. Climate change is relevant to the food system, both in terms of changing food availability, food security, and food safety risks. Rising temperatures and extreme weather events can alter microbial growth patterns, increase pest prevalence, and affect food storage conditions.

Climate change and biodiversity loss are placing growing pressure on the entire food system, with direct consequences for food safety and regulatory oversight. At the primary production level, shifting weather patterns and degraded ecosystems are affecting crop yields, planting cycles, and pest prevalence. Primary producers are facing increased costs as well as changes in the number of workers they need to hire due to more frequent weather damage, altered flowering times, and pesticide and fertiliser use.

Temperature increases may lead to seasonality changes (e.g. warmer summers, or more frequent and severe winter frosts). This is associated with biodiversity loss in ecosystems. Reduced biodiversity can weaken natural defences against foodborne pathogens. For example, fewer pollinators or predator species may lead to increased pesticide use, which introduces chemical risks that must be monitored and regulated to protect consumers' health.

As a factor of climate change, precipitation has a significant impact on the food system. Crops are sensitive to changes in precipitation and moisture. Too much rain can lead to flooding and crop damage, while too little rain can lead to drought and crop failure. As a result, food waste is also likely to increase, especially if crops are damaged or if storage fails to meet food safety standards. The FSAI may need to assess the likelihood or impact of contamination from natural plant toxins, mycotoxins, heavy metals, and pesticide residues. Reduced biodiversity weakens natural pest control, which may result in increased pesticide use in primary production; this may affect the number of chemical safety assessments that the FSAI conducts annually.

Loss of pollinators tends to affect crop yields and quality, potentially leading to increased reliance on imported foods with different safety profiles. This may impact on the work conducted by the

FSAI and its contract agents in relation to monitoring and ensuring that imported food meets the same high standards as EU-produced foods. Habitat degradation can introduce new pathogens or alter microbial ecosystems, which may create emerging risks that the FSAI must monitor.

Overall, these environmental and sustainability challenges require a coordinated scientific response under a One Health approach to inform regulatory action and safeguard public health.

Purpose of the Science Strategy

Our purpose is to create a responsive and innovative scientific foundation for the work of the FSAI that anticipates food safety risks, informs evidence-based policy, and drives continuous improvement in food safety outcomes under our vision of “safe and trustworthy food for everyone”.

This means that we:

1. Generate and apply the best and most appropriate science and data-driven insights and communicate effectively on existing and emerging food safety risks.

2. Build scientific capability that positions Ireland as a trusted partner in evidence-based food safety regulation globally.

3. Foster collaboration between researchers, official agencies, industry and other stakeholders to translate science into practical food safety protection for consumers.

Strategic goals and objectives for the FSAI Science Strategy 2026–2030

Based on the identified external factors and stakeholder inputs, the following strategic goals and objectives will shape the future direction of food safety science in the FSAI:

Goals	
1	Knowledge and Innovation: Science, Expertise, Creativity
2	Connectivity and Information: Collaboration, Communication, Data
3	Risk and Regulation: Existing and emerging risks, Regulatory standards, Sustainability

Figure 1 FSAI Science Strategy 2026–2030 purpose and goals

Table 1 Goal 1 Knowledge and Innovation

Knowledge and Innovation: Science, Expertise and Creativity		
Goal	**Objectives**	**High-level activities**
1. Innovative use of regulatory science to strengthen the evidence base and expertise of the FSAI	1. Harness the efforts of the FSAI and the wider scientific research community to support risk assessment and risk management decision-making	• Identify gaps in the food safety evidence base where work would support FSAI risk assessment, and encourage research to fill such gaps • Integrate FSAI expertise into the work of national research funding bodies for the development and oversight of food safety research • Maximise use of internal and external data sets that are essential for risk assessment • Participate in European and national research consortia either as full partners or on steering/oversight groups
	2. Encourage an open-minded approach to innovation and the continual development of scientific expertise in line with the FSAI People Strategy	• Enhance the scientific skill sets in the FSAI that are necessary for its regulatory science work • Explore innovative approaches to learning and development of scientific staff • Embed a culture of utilising innovative methods (creative problem-solving, design thinking and systems thinking) in the FSAI science base

	3. Enhance the FSAI's scientific resources through the work of a dedicated, high calibre Scientific Committee with an ambitious, forward-facing work programme	• Establish a process that attracts and supports the highest calibre food safety scientists to the work of the Scientific Committee • Design and execute an ambitious programme of work for the Scientific Committee that supports the regulatory work of the FSAI

Table 2 Goal 2 Connectivity and Information

Connectivity and Information: Collaboration, Communication, Data		
Goal	**Objectives**	**High-level activities**
2. Promote the FSAI as a trusted source of food safety science through active communication, strong partnerships and robust data systems	1. Establish and enhance a high-impact collaboration with the European Food Safety Authority (EFSA)	• Support EFSA and EU member state partnership initiatives • Explore opportunities to exchange staff and knowledge with EFSA • Deliver an active and supportive EFSA Irish National Focal Point and communication platform • Encourage Irish involvement in EFSA's work through our network of third-level institutions and state bodies
	2. Highlight the FSAI's scientific work through external communications and educational outreach and increase the accessibility of the FSAI's science	• Present science in plain English, and within the limits of the FSAI remit, tackle misinformation on social media, websites, and other consumer communication channels • Enhance the visibility of FSAI science and risk communication through active participation in national and international events, educational outreach, tailored information resources, and publication of scientific papers
	3. Embed the use of social and behavioural science to strengthen our evidence base	• Explore research on evolving attitudes, behaviours and expectations regarding food safety, and embed this in our work • Leverage national and international scientific partnerships to enhance skills and promote best practice across the organisation

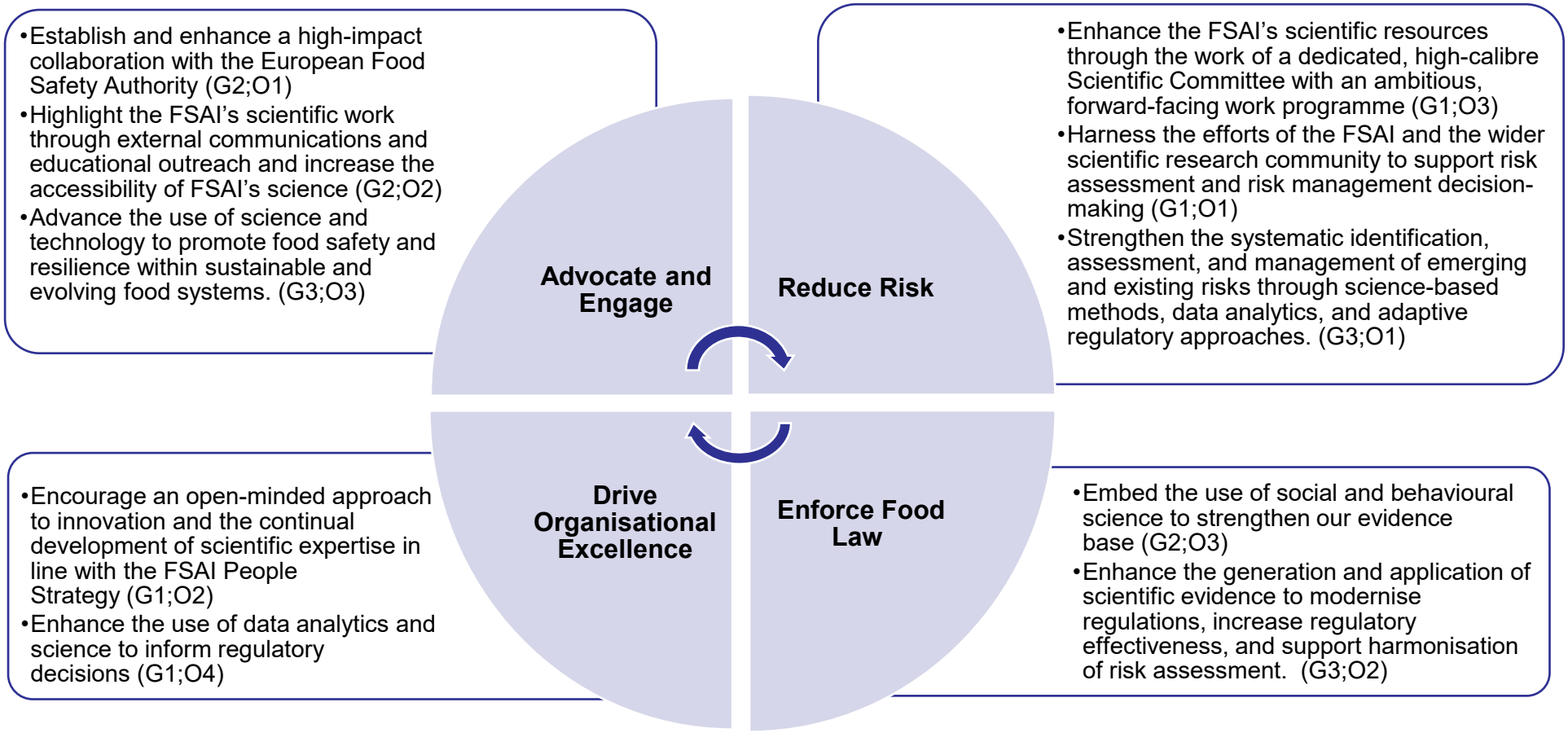
	4. Enhance the use of data analytics and science to inform regulatory decisions	• Expand the evidence base and accessibility of data in line with data governance procedures • Establish protocols to detect and mitigate data inaccuracy (intentional or unintentional) and other data integrity threats • Promote the use of data and AI predictive models using historical and real-time data to anticipate emerging risks • Promote and support implementation of best-in-class analytical methods for the detection of hazards and risks in regulated areas, e.g. whole genome sequencing, antimicrobial resistance, chemical testing, and residue testing

Table 3 Goal 3 Risk and Regulation

Risk and Regulation: Existing and emerging risks, regulatory standards, sustainability		
Goal	**Objectives**	**High-level activities**
3. Leverage scientific research, data analytics, and systems thinking to proactively identify, evaluate, and manage existing and emerging risks within healthy and sustainable food systems	1. Strengthen the systematic identification, assessment, and management of emerging and existing risks through science-based methods, data analytics, and adaptive regulatory approaches	• Refine emerging risk detection and early warning systems to improve their agility and accuracy • Strengthen and expand our surveillance and risk assessment system for established and persistent risks • Share our risk assessment and emerging risk expertise with international partners and learn from others
	2. Enhance the generation and application of scientific evidence to modernise regulations, increase regulatory effectiveness, and support harmonisation of risk assessment	• Apply systems science to map and visualise regulatory workflows, bottlenecks, interdependencies and gaps in coordination across agencies • Review new technological advancements and other country practices to identify where regulation of these may be outdated or incompatible across EU member states

	3. Advance the use of science and technology to promote food safety and resilience within healthy, sustainable and evolving food systems	• Further develop our expertise to keep pace with emerging science and technology, including innovations that result from the continuing development of more sustainable food systems • Build a system to maintain awareness of national and international research developments towards more healthy and sustainable food systems

Annex 1: Synergy with the FSAI's corporate strategy 2025–2029



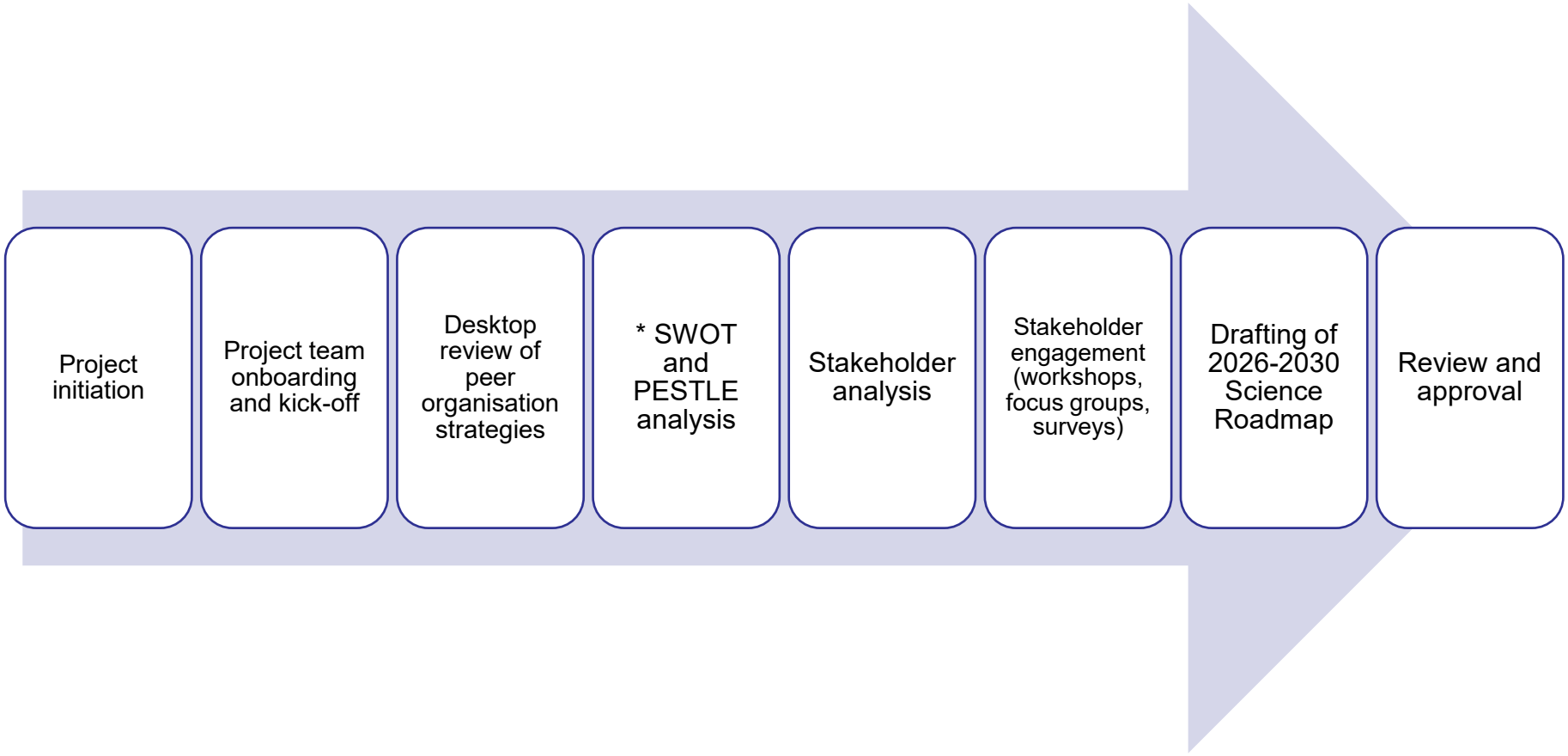
Corporate goals from the Strategy 2025-2029 are shown in the circle segments, while associated objectives from the Science Strategy are shown in the rectangles.

Figure 2 How the FSAI Science Strategy 2026–2030 supports the FSAI's corporate *Strategy 2025–2029.*

Annex 2: Science Strategy 2026–2030 development process

The following are the steps that have been taken to develop the FSAI Science Strategy 2026–2030:

- The project was initiated, the project team was recruited, and a kick-off meeting was hosted by the project sponsor.
- A review of the FSAI Science Strategy 2020–2024 action plan was carried out to identify what was previously achieved and still relevant to the current strategy.
- A desktop review of peer organisation strategies was conducted by the project team in addition to SWOT and PESTLE analysis and stakeholder mapping.
- An internal workshop was hosted with the FSAI Chief Specialists to harness their individual expertise and understand their collective views on the key topics to be addressed in the next strategy period.
- A workshop was hosted with all FSAI staff, whether in scientific roles or not, to gather views on what topics they considered should be part of the next Science Strategy.
- Based on the stakeholder analysis that was carried out, an external consultation was conducted via a combination of surveys and focus groups.
- Having considered all of the information gathered, the project team developed a first draft Science Strategy 2026–2030.
- The initial drafts were amended following review by the project sponsor.
- The FSAI CEO approved the FSAI Science Strategy 2026–2030.
  The FSAI Science Strategy 2026–2030 was shared with the Board and other key stakeholders.



* SWOT = Strengths, Weaknesses, Opportunities, Threats

PESTLE = Political, Economic, Social, Technological, Legal and Environmental

Figure 3 Strategy development process flow

Members of the Science Strategy Development Team

Sponsor

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Chair

Dr Clare O'Donovan, Manager, Public Health Nutrition

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