2035 PERSPECTIVE

The Context

Envisioning and getting prepared for the future is essential for EFSA and for European Food Safety. With sustainability and health high on the global agenda and considering the crucial role played by food in that context, EFSA has a duty to think ahead and consider how its role and purpose might evolve in the long-term.
The EU holds firm on its global ambition to lead the way on the UN sustainability agenda. The recent Commission reflection paper "Towards a sustainable Europe by 2030[1]" confirms that pursuing the **17 UN's Sustainable Development Goals** (SDGs) will continue to drive EU policies in the 10 years to come, further capitalising on the substantial achievements made thus far by the Juncker Commission.

This endeavour will surely continue and likely intensify beyond 2030, hence it can be safely assumed that post-2030, sustainable development objectives will continue to frame EU food policies. Food and food safety does matter for most if not all SDGs, more specifically for SDGs no. 2 ("Zero Hunger"), no. 3 ("Good health and well-being"), no. 6 ("Clean water and sanitation"), no. 12 ("Responsible consumption and production"), no. 13 ("Climate action"), no. 14 ("Life below water") and no. 15 ("Life on land"). Also, relevant to EFSA, SDG no. 17 calls for "regional and international cooperation on and access to science, technology and innovation, and enhanced knowledge sharing". In the **EU policy agenda**, food is very much at the core of all initiatives under, or ongoing reforms of, public health, common agriculture and fisheries policies, the circular economy package, Horizon 2020/Horizon Europe and other R&I programmes.

On a global level, and since 2015 in particular (SDGs and the EXPO exhibition) food is also very much in focus as a topic, with countless initiatives from multilateral bodies and institutes at both scientific and policy levels. Among them, a recent study by the World Resource Institute[2] (WRI) constitutes a useful reference as it examines on a holistic level the global implications on food systems[3] arising from the expected increase in world population by 2050 (9.8M in 2050 from 7M in 2010). The study identifies three main gaps that need to be filled at a global level in order to achieve a sustainable food future. They are respectively; the food gap, i.e. the required increase in yields/crop calories produced (+56% on 2010 levels); the land gap, i.e. the area that would normally be required for increasing production, which has to be saved to protect the biodiversity status quo to 2010 levels (593 Mhas, i.e. twice the size of India), and; the greenhouse gas mitigation gap, i.e. the difference between the likely emissions from agriculture and land use change in 2050 and the current target linked to maintaining global warming below 2°C above pre-industrial temperatures (-67%). The study proposes several methods and initiatives to address the three gaps, including technological innovation, regulatory and management actions, educational programmes, as well as market and behavioural incentives. Unsurprisingly, all these proposals have clear implications regarding food safety. The WRI study clearly shows that adopting one-health concepts, integrating food safety along with food security, health and sustainability aspects is essential to address the scientific and policy challenges of future food systems.

1 https://ec.europa.eu/commission/sites/beta-political/files/rp_sustainable_europe_30-01_en_web.pdf
2 https://www.wri.org/publication/creating-sustainable-food-future
3 Food systems: "the aggregate of food-related activities and the environments (political, socioeconomic, and natural) within which these activities occur" (Ref.: https://serc.carleton.edu/integrate/teaching_materials/food_supply/student_materials/1033).

Regrettably, reality shows that food safety is often neglected in the EU/global political discourse. The debate tends to focus on food security and over/under-nutrition, and food safety aspects are often relegated as a given ("unsafe food is not food") or less essential ("no food, no hazards"). This attitude should be changed, as it is evident that food security, health and sustainability can only be pursued in parallel with an equally significant effort to address the related food safety aspects.

What will the food future hold? i.e. How will the methods and initiatives envisaged in the WRI study unfold in practice? It will depend on several factors, including climate and market developments, innovation, and expectations emerging at a societal level. It is therefore difficult to make predictions on the context within which EFSA will be called to operate.

Useful insights in this respect are provided by the foresight study 'Delivering on EU food safety and nutrition in 2050 - future challenges and policy preparedness' issued by the European Commission Joint Research Centre. The study highlights a few scenarios including trends and long-term projections on how the EU food systems might evolve in the future.

For the purpose of this current reflection, to help **identify future pathways for EFSA and food safety in the EU**, three scenarios are singled out and summarized below. They are assessed with regard to their potential impact on environmental sustainability, food security, food safety and societal expectations.

a) **"Global Food" Scenario** assumes a continuation of current macro-trends (land use, agro-industries, trade etc.) and existing public policies.

   The expected outcomes by 2050 are clearly negative. While the system might deliver food security on a global scale, it is widely expected to fail in regards to ensuring sustainability, solving the prevailing food safety issues (food-borne and diet-related diseases), and in meeting the concerns increasingly expressed by society. Furthermore, this scenario raises the prospects of increasing inequalities worldwide through the development of privileged partnerships and trade routes (e.g. among BRICS, Europe and North America etc.[4])

b) **"Regional Food" Scenario** assumes that global trade is abandoned and "self-sufficient" food production occurs locally or regionally, employing advanced technologies and enhancing the food value (e.g. organic, extensive farming, low-scale).

This scenario is often portrayed as highly desirable in the EU policy debate and seems to reflect the desires of many EU consumers. It would surely help to scale down the pressure on natural resources. On the other hand, it would not deliver food security, considering the EU is already today a net importer of food. It would also raise important challenges with regards to food safety, given that food production would be scattered among a large number of communities and individuals, often lacking know-how and instruments to enforce food-safety standards, hence raising the risk of food crises.

c) **Pharma Food" Scenario** assumes a strong emergence of innovation and new technologies both at the level of farming and production. This shall ease the pressure on the environment and also respond to consumers' wish for a healthy lifestyle through the production of functional, processed foods and even foods with added pharmaceutical substances ("Phoods").

   This scenario would likely be unwelcome by a significant part of EU society in view of more traditional attitudes still prevailing towards food, yet it is very appealing in regards

[4] A scenario envisioning the emergence of reinforced regional partnerships is presented separately in the JRC study ("Partnership Food Scenario").

to food security and environmental sustainability. It is also potentially beneficial in promoting safe and healthy nutrition, although it would require constant and timely support by science in assessing the collateral hazards while new technologies are developed.

The above scenarios are a nice reference for envisioning how EFSA's operating environment might evolve until 2035 and what is needed to prepare for it, strongly leveraging on the disruptive potential of digitalisation. The Regional and the Pharma Food scenario can be seen as two extreme goal posts, and the pathway to 2035 will surely place itself somewhere between the two, hopefully avoiding the bad compromise portrayed by the "Global Food" scenario.

The Regional and Pharma food scenarios portray different sets of food safety challenges and as food systems will navigate in search of the best way forward, EFSA will have to ensure that priorities can be quickly shifted and that relevant scientific knowledge is generated as the scenarios evolve. For example, the Pharma Food scenario would require boosting food safety research to accompany the rapid pace of innovation, and a strong engagement with the society to ensure that innovation is accepted and embraced. Conversely, the Regional Food scenario would require redefining the way risk assessment, risk management and risk communication are carried out, seeking new ways to interact with producers and consumers for knowledge generation and policy enforcement.

As food safety is increasingly a global issue, global approaches will be required to address threats and seize opportunities. This calls for enhanced international interaction at scientific and policy level with the aim of harmonizing standards, methods, models and protocols worldwide.

In summary, the food future is uncertain, but some challenges facing EFSA are clear: raising the profile of food safety within the broader policy debate on food and with regard to research, develop the capabilities and the organisational agility to be able to adapt to rapidly evolving environment, crucially, enable an system whereby food safety issues are treated in close connection with food security, health and sustainability in an integrated system that brings together national, EU and international players. Agility will be a distinctive feature in light of the complexity of the issues to be addressed and requiring cross-sector/area collaboration and in a context of growing inequalities and globalization of risks and hazards.

In view of the above, EFSA's 2035 perspectives regards food safety as linked with food security and nutrition, which in turn are linked to health and sustainability. These three dimensions are envisioned in sequence in the following sections.

The Perspective

1. EFSA envisions to operate as a regulatory science agency within a wider **EU food safety system**, which is resilient, efficient, open and connected and brings together policymakers, stakeholders and the society at large. EFSA anticipates:
    - An EU set of food safety methods and standards (EU Risk assessment tool-box) becoming a benchmark globally, adopted or referred to by international partner organisations.
    - A clearly defined organisational identity, whereby EFSA's role is to promote and enable a risk assessment system which:
        - provides responses to scientific questions while meeting commonly agreed scientific and quality standards, and;
        - is based on inter-dependence, participation, collaboration and co-design of scientific advice.
    - A shared system for managing food safety knowledge involving EU, Member States and international organisations, based on a model which:
        - interlinks people, technology and processes while enabling innovation;
        - promotes joint tools, methodologies, and shared data-sets;
        - ensures that information is fully transparent, accessible and usable by the entire EU food safety ecosystem when and as needed;
        - supports faster knowledge development and decision-making;
        - preserves the independence of science while addressing confidentiality, data protection, privacy and ethical aspects;
    - Regular monitoring of the occurrence and impact of long-term diseases caused by chemical contamination (e.g. cancer) and dietary practices (chronic diseases).
    - Methodologies to assess the societal burden of the various diseases and the cost-benefit ratio of risk management decisions.
    - Common, interoperable data formats covering various sources (e.g. market-monitoring, official controls, nutri-vigilance) and types (e.g. biomonitoring, biosensors).
    - Digitalised scientific processes, including the widespread use of prognostic and predictive algorithms, in-silico modelling, Big Data analytics, Artificial Intelligence, etc.
    - Regular use of crowdsourcing for data and knowledge mining purpose.
    - Well-developed and widely available risk assessment knowledge, on top of the traditional "domain" expertise (toxicology, microbiology, nutrition, statistics, etc.) provided by academia and research.
    - Comprehensive and adequately funded research programmes (EU-wide, globally connected), to update/develop data and methods regarding inter alia:
        - biological, chemical and ecological predictive modelling, computational toxicology, bioinformatics biomonitoring and omics data;

- holistic models (multiple stressors, multiple geographical and temporal scales);
- new hazard and emerging risks (chemical mixtures and combined toxicity, endocrine active substances, plastics and pollutants)
- innovative products and technologies;
- landscape-environmental risk assessment methodologies;
- new plant pests and animal diseases;
- granular exposure assessments (multiple target groups, allergies and auto-immune diseases).

- Collaborative communication on risks involving science and policy bodies across the EU, reaching out to all EU citizens and enabling them to improve their understanding and critical evaluation of scientific information.
- Monitoring of risk perceptions and societal concerns across the Member States and use of social science methods to develop clear, contextualized, relevant, fit-for-purpose communication on risks.
- New communication technologies to maximize impact and provide personalized messages addressing the needs of diverse audiences.
- New technologies supporting the engagement with stakeholders, enabling to extend the scope for interaction and to reach out to the national organisation.
- Customer services allowing regular interaction with applicants and helping to deliver process efficiency, legal certainty and reduced time-to-market.

2. EFSA recognises the critical importance of food systems to deliver **food security and healthy nutrition** (i.e. stability of supply, availability, physical and economic access and utilisation based on cultural and dietary values). Accordingly, EFSA's vision embraces:
   - A substantial decrease of hunger and obesity on a global scale and material progress towards food security, based on the critical contribution by the EU to multilateral programmes and governance bodies.
   - Continuing high standards of safe, nutritious and affordable food for all EU citizens, resulting from a system that allows sustainable use of natural resources.
   - A material reduction of food-borne diseases from all hazards (bacteria, viruses, parasites, prions, chemicals) as well as diet-related chronic metabolic diseases at the EU level.
   - EU R&I policies and programmes geared towards increasing yields and productivity while reducing emissions and preserving biodiversity and natural resources.
   - An EU food policy framework promoting a multi-disciplinary approach and a system-view to face increasingly complex issues, including:
     - new risks, emerging issues/complexities linked to systemic changes (climate, demography, trade, production techniques, and society);
     - holistic approaches (risks vs. benefits, alternative production and consumptions patterns, food and non-food related health-outcomes);

- good nutritional practices (collective, personalized) and enforcement strategies (regulatory norms, soft policies and behavioural nudging);
- circular food systems (waste, recycling);
- fraudulent or deceptive practices (tracing, detection and rapid reaction);
- tools and systems to provide consumers with comprehensive information on hazards and dietary values.

3. EFSA also recognizes that food systems should be **compatible with the overarching sustainability goals** and that its future role shall be connected with the wider set of science and research bodies active on these issues. Accordingly, EFSA's vision in support of a climate-smart sustainable food system comprises of:
   - Material progress on a global scale towards the entire set of "post-2030" SDGs[5], based on multilateral science-based policies adopted with the decisive contribution of the EU.
   - First-rate health and safety at the EU level for people, animals, plants and the environment, thanks to the adoption of "one-health" science-based policies supported collaboratively by EU science and research bodies.
   - Open and transparent knowledge management processes, whereby EU science and research bodies engage with partner organisations, stakeholders and citizens in a climate of mutual trust and collaboration.
   - A comprehensive framework enabling EU science and research bodies to cooperate systematically with each other:
     - under the policy direction of the EU legislative and executive institutions;
     - based on shared goals, aligned strategies and coordinated investments and work-programmes;
     - pursuing resource efficiency via pooling enabling services such as procurement, HRM and digital, and by optimizing work sharing (also based on regulatory streamlining/alignment);
     - enhancing effectiveness through the joint deployment of scientific capacities (expertise, data management, computational power);
     - jointly developing scientific knowledge and preparedness face to new threats and emerging risks;
     - optimizing EU and national R&D and structural funding on agriculture, health, environment and R&D;
     - supporting R&I and the introduction of new technologies while promptly addressing the related safety concerns.

[5] to be defined by the UN/multilateral system.

Conclusion

The above perspective sets the scene for the development of EFSA's Strategy 2021-2027. It helps to place the Environmental Scanning and the SWOT exercises in context and provides a long term reference for defining the strategic objectives, and directions to pursue them.