



FOODSAFER

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FoodSafeR is a 4-year Horizon Europe funded research project that started in October 2022.

The project aims to design, develop, and test the building blocks of an innovative proactive and holistic food safety warning and management system, which focuses on emerging of food safety hazards and associated risks.

FoodSafeR embodies integrated approaches to hazard characterisation and risk management in a comprehensive suite of future-oriented case studies, tools, methods, strategies, models, guidance, and training materials.

These resources are being made available in the **FoodSafeR Open Digital Hub**, a one-stop-shop platform uniting a community of professionals from the European and international food safety system.



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Holistic approach for identification of emerging food safety risks

Introduction

With the General Food Law (EC/178/2002), FBOs (Food Business Operators) are clearly responsible for food safety of the produce at their enterprises. Safe food is food that is produced, stored, and prepared in such a way that, upon consumption, consumers are not affected by either acute or chronic adverse health effects. Unsafe food means food contaminated with a microbiological or chemical (or physical) hazard that can result in negative effects for human and animal health.

Food producers and governmental agencies have a full packet of food safety procedures in place, consisting of -amongst others - regulations, food safety management systems and monitoring programs. While such systems function well under known stable circumstances, the food system and its environment are changing fast, and food safety risks can easily emerge and go out of control (become super risks).

Food safety risk management thus needs to be adapted to be able to cope with the multiple drivers of change, which may arise from within and outside the food supply chain. Examples include political changes, climate change, consumer trends (Figure 1).

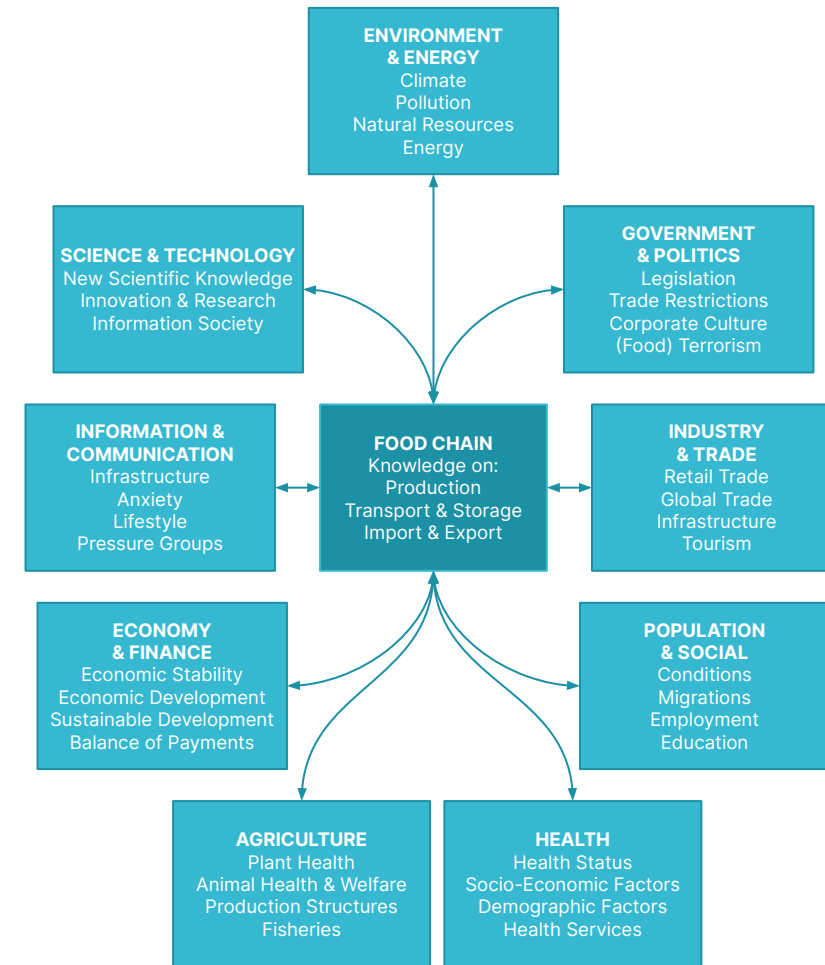


Figure 1. Holistic approach for identification of emerging risks in the feed or food supply chain, derived from ¹



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The Team

The FoodSafeR consortium of 19 leading academic, research and industry organisations from across Europe, is led by FFoQSI.

FFoQSI is the Austrian Competence Centre for Food and Food Quality, Safety and Innovation. It is a multidisciplinary joint research hub that encompasses scientific, national and international business partners food safety authorities and stakeholders, technology SMEs and startups from the food system.

The FoodSafeR Advisory Board of 25 leading stakeholders from the food safety field gives us a global reach.

Emerging food safety risk identification

The drivers can lead to the emergence of food safety risks. Emerging food safety risk comprise 3 groups²:

1. Known hazard that has reemerged or reintroduced in the food chain, e.g., due to changes in practice or termination of certain preventive measures;
2. Relatively new or unknown hazard, e.g., discovered by new or more sensitive detection techniques
3. Changes in consumer diet that lead to increased exposure to certain hazards

Early identification of emerging hazards could provide risk management the opportunity to take measures to prevent the hazard from becoming an (emerging) risk.

One of the approaches to do so is the so-called “Holistic approach”, which requires:

- A. Identification of the drivers of changes³
- B. Identification of one/more indicators, with data sources, for each driver of change
- C. Following the indicator trends
- D. When indicator values go out of the normal ranges of values, this may indicate the emergence of a food safety risk.



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Holistic approach for identification of emerging food safety risks

In FoodSafeR, this holistic view is taken (Figure 2). An Open Digital Hub is developed in which the indicator trends can be followed by end-users of the Hub, such as risk managers.

FoodSafeR brings the latest science base to Food Safety Risk Analysis:

e.g. new knowledge in drivers and key factors for food safety risk emergence in the food system; Risks of short supply chains vs. global chains; understanding of persistence of viruses, of new AMR traits, etc.

DATA of sufficient quality

New flexible data structure to display available knowledge on known risks (or individual characteristics) along food-chains, regional and temporal patterns

Advanced Big Data-based prediction tools



A JOINED UP APPROACH TO THE IDENTIFICATION, ASSESSMENT AND MANAGEMENT OF FOOD SAFETY RISKS

FoodSafeR Food Safety Risk Analysis: a structured approach that can be tailored to answer specific questions about risk or risk reduction

FoodSafeR will design a ground-breaking holistic and proactive risk-benefit and cost-benefit assessment framework

FoodSafeR Toolkit for modern risk management systems

- Support system for risk-oriented analytics Advanced Big Data-based prediction tools for mycotoxin & plant toxin occurrence.
- Smartphone-based tools for the determination of plant and fungal toxins.
- New detection devices & tools for combating key emerging contaminant .
- Food risk mitigation/ de-escalation strategies.
- Training tools for risk assessors and risk managers.
- Lifelong learning material for curricula and educated consumers .



Delivered via an **Open & Connected Digital Hub**



Figure 2. FoodSafeR holistic approach for the identification of emerging food safety risks.

Resources:

- 1 Noteborn, H. P. J. M. et al. 2006. Report of the EFSA service contract EFSA/SC/tender/01/2004 "forming a global system for identifying food-related emerging risks—EMRISK". EFSA Supporting Publications, 2, 224R. <https://doi.org/10.2903/j.efsa.2005.224r>
- 2 EFSA. Definition and description of "emerging risks" within the EFSA's mandate, 2007. Available at: <http://www.efsa.europa.eu/en/scdocs/doc/scdefinitionemergingrisksen.pdf>, Accessed on July 16, 2010.
- 3 Kandhai MC, Booij CJH, Van der Fels-Klerx HJ. 2011. Expert study to select indicators of the occurrence of emerging mycotoxin hazards. Risk Analysis 31(1): 160-170. DOI: 10.1111/j.1539-6924.2010.01486.x



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