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Milestone M16

Qualitative scheme of interacting external drivers with holistic assessment

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1. Introduction

Evaluating food systems in their totality requires a holistic risk-benefit assessment approach that integrates different dimensions including assessments of microbiological and chemical risks and nutritional benefits, and evaluation of environmental and economical impacts. Emerging drivers such as climate change or technological innovation are influencing the sustainability and safety of food systems. To support evidence-based decision-making in food systems, the assessment of both the risks and the benefits of food products and risk mitigation interventions using a combination of qualitative and quantitative aggregation methods is required. In this framework, M16 provides a general scheme of holistic risk assessments in the food chain and how to account for the interaction of changes and impact of external drivers.

2. Methods

A qualitative scheme was developed (see Figure 1) describing qualitative and quantitative assessment and integration methods suitable for holistic risk-benefit assessment (partly based on Országh et al., 2024), and how to address the impact of emerging risks and drivers and evaluation of risk mitigation interventions

3. Results

Figure 1 shows the qualitative scheme representing the steps to follow in order to perform a **Holistic Risk Assessment** of the current food chain, but also in a dynamic environment where changes and/or drivers alter the current situation, affecting the risks, benefits and economical and environmental impacts.

This scheme consists of three main steps: (i) identifying the relevant food safety hazards, nutritional benefits, and environmental impacts of the current food system, (ii) aggregating the results from the various assessments using qualitative and quantitative methods, and (iii) evaluating the impact of drivers or changes on hazards, benefits, environmental footprint, and costs associated with the food chain, and determination and evaluation of intervention strategies to mitigate the risk and impact on the various dimensions.

Integrating methods that encompass food safety, nutrition, environmental impact, and economic factors is complicated but essential for informed decision-making. By accounting for emerging drivers, stakeholders can better understand the complexities of food systems and devise effective strategies to enhance public health and foster sustainability.

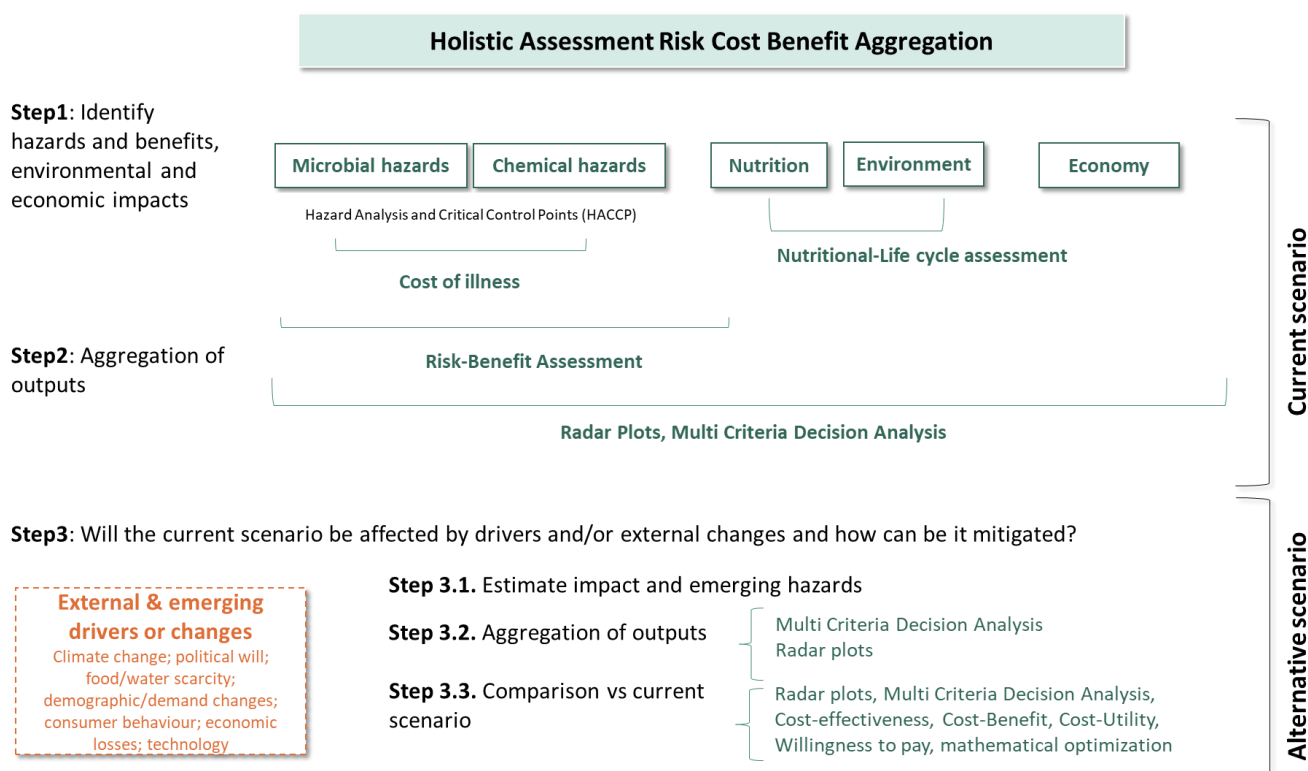


Figure 1. Qualitative scheme for holistic assessment risk cost benefit aggregation

Conclusion: In this milestone the five dimensions have been defined (step 1), and methods to qualitatively or quantitatively represent and aggregate them (step 2), and seven drivers or external changes have been identified that affect food systems and approaches to evaluate the impact of risk mitigation interventions on the five dimensions (step 3.1-3.3).

4. Reference

Országh E., De Matteu Monteiro C., Pires S.M., Józwiak A., Marette S., Membré J.-M., Feliciano R.J. 2024. Holistic risk assessment of food systems. Global Food Security 43, 100802. Doi: 10.1016/j.gfs.2024.100802.