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# MEASURING THE STATE OF FOOD SAFETY IN BELGIUM WITH A FOOD SAFETY BAROMETER



## HIGHLIGHTS

- Measuring the food safety level with quantifiable indicators has been of interest to public authorities, but the complexity of the food control and food safety systems make the task challenging.
- The Food Safety Barometer in Belgium is a science-based and widely recognized tool with 30 indicators that is used to measure progress, identify priorities for the public authorities and communicate issues to stakeholders.
- The Barometer was developed in collaboration with the independent Scientific Committee established at the Belgian Federal Agency for the Safety of the Food Chain (FASFC) and several expert stakeholders.
- The process was grounded in the Pressure-State-Response concept: the current status of food safety (state), factors influencing the current status (pressure) and actions taken to maintain or improve food safety (response).
- The indicators were selected to describe the current status of food safety of the whole food chain from farm to fork, and set based on criteria including the availability of the data, measurability, reliability, independence, durability and unambiguousness.
- Measuring food safety benefits from indicators that are stable over time as it enables trend analyses; and a flexible system that allows adaptation to changes in food safety with new indicators.



**Contributing Organization**  
Belgian Federal  
Agency for the Safety of  
the Food Chain (FASFC)



**Geographical coverage**  
Belgium



**Main food safety issue**  
Measuring the state of  
food safety in Belgium



## INTRODUCTION

Understanding the state of food safety in a country enables taking evidence-informed food safety risk management and policy decisions, and communication the food safety state to stakeholders and consumers in a targeted manner. Measuring the food safety level with quantifiable indicators has been of interest to public authorities, but the complexity of the food control and food safety systems make the task challenging.

Well-designed indicators measuring food safety precisely would support continuous improvement of food safety over time. The indicators should be looking for data that are easily available and unambiguous. They should describe different areas of food safety from farm to fork and measure effectiveness of actions taken by food business operators and food control authorities. The possibility to collect data for indicators would vary between countries due to differences in food safety systems and information technology infrastructure.

In an attempt to measure food safety which comprise a set of indicators, Belgium has developed a “Food Safety Barometer”. The Barometer gives a helicopter view of the food safety state in Belgium and is an example of how to create and apply indicators to measure food safety. It has been in use since 2010 and is evolving over time.



## OBJECTIVE

The objective behind the creation of the Barometer was to obtain a yearly snapshot of the food safety situation in the country with indicators that cover all the activities involved, to measure the progress over time, identify priorities for the public authorities and communicate relevant issues to all the stakeholders in the country. The experts created a system that uses 30 indicators (Baert *et al.*, 2011; SciCom, 2022). They include all links of the food chain, from suppliers to consumers, for both the Belgian production and for imports.



## METHODOLOGICAL APPROACH

The Food Safety Barometer was developed in collaboration with the independent Scientific Committee established at the Belgian Federal Agency for the Safety of the Food Chain (FASFC) and several expert stakeholders. The process was grounded in the Pressure-State-Response concept, which emphasizes the current status of food safety (state), factors influencing the current status (pressure) and actions taken to maintain or improve food safety (response) (SciCom, 2010). The indicators were chosen to describe the current status of food safety from farm to fork. More closely, 30 indicators were chosen to describe 1) presence of chemical and microbial hazards; 2) inspection outcomes; 3) compliance of food businesses’ self-checking; 4) zoonotic agents; and 5) number of reported foodborne outbreaks. The indicators are weighted based on their importance (the different weights were defined by both scientists and stakeholders) and displayed as percentages.

The majority of the data for the indicators source from the control programme of the FASFC, also the National Reference Centre for disease data.

In the Barometer, each indicator is expressed as a positive or a negative change in comparison with the previous year, which makes the yearly follow-up easy. The result of each year is also compared to the result of a reference year to express the progress made in food safety in a long-term perspective as reflected by the barometer. Changes in results of indicators can be explained, for example, by changes in the epidemiological situation or control effectiveness or modification in regulations or control strategy.

The set of indicators published by FASFC (SciCom, 2010) have been consistent over time and describe the food safety of the whole food chain and its stakeholders. The indicators were chosen based on following criteria:

- Measurability
- Availability
- Independence from other indicators
- Reliability (as free from bias as possible)
- Unambiguousness (easy to interpret the result)
- Durability (is used for a long time)



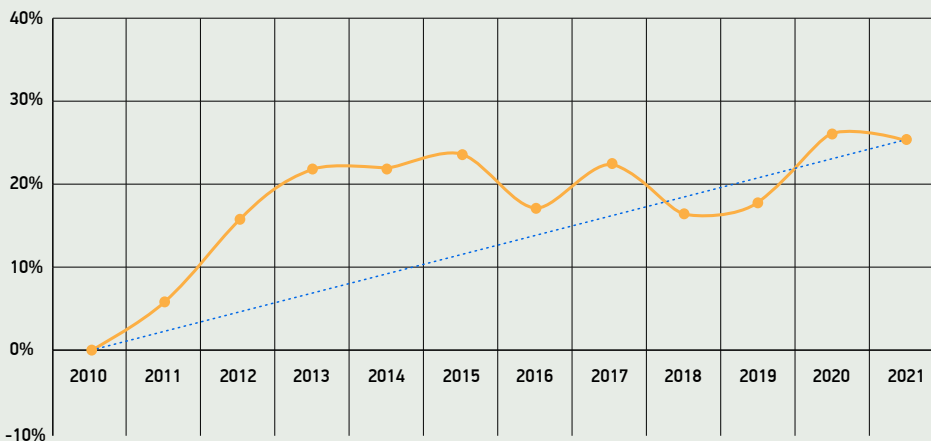
## ACTORS INVOLVED

- Federal Agency for the Safety of the Food
- Scientific Committee established at the FASFC
- Advisory Committee of the FASFC
- Enterprises, universities, scientific institutions



## RESULTS AND IMPACT

The Barometer has been in use for more than a decade and it has facilitated the standardisation of food safety measurements. The results are communicated in the yearly report of the FASFC. The barometer has helped to display the state of the food safety in Belgium for stakeholders, consumers, and trade partners in an easily assimilated way, which has increased the awareness of food safety. It transparently expresses both positive and negative changes in food safety, facilitating the search for explanations to the changes and assessment of the impact of control strategies.



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By 2021, the barometer results in Belgium increased 25.3% compared to the reference year 2010. Source: Belgian Federal Agency for the Safety of the Food Chain, Activity Report 2021 year 2021.



## SUCCESS FACTORS

- Multi-disciplinary Scientific Committee advising on and validating the Barometer continuously;
- Advisory Committee including representatives of other public administrations and of the various sector and consumer organizations;
- Availability of food safety data and use of digital tools for data collection, stability over years of the control program strategy;
- Farm to fork approach to the food safety in the food chain;
- Well established and standardized control procedures in the field, sustained self-checking procedure in operators;
- Statistical and analytical data availability; and,
- Easily communicable format of the Barometer.



## CONSTRAINTS/LIMITATIONS

The barometer was developed together with stakeholders representing the whole food chain which was a strength in terms of participation and gathering the best knowledge, but also a challenge because of different emphasis on food safety risks. The weight assigned to the separate indicators is based on expert opinion and not on risk assessment. However, all selected indicators contribute to the measurement of food safety and the weighting of the indicators resulted in a science based and broadly accepted barometer. Food safety is difficult to express as absolute figures and therefore the results of the barometer are indicated as a comparison to the state of the previous year.



## LESSONS LEARNED

The development of a science-based wide-range food safety barometer requires expertise and resources. The selection of the indicators is critical as the whole barometer is based on it. The weighting procedure of each indicator is subjective, although based on expert opinions. A more objective methodology could be developed in the future.

The interpretation of the results of indicators can be difficult due to many reasons. The number of foodborne outbreaks highlights the issue well: a low number of outbreaks can be due to a good food safety situation or a poor reporting system, as well as external constraints (e.g. lockdown and restaurant closure during the Covid-19 crisis). It is important to understand how the food safety system works in the country, what kind of factors affect food safety and how the data is reported and collected to be able to make sound interpretations.



## SUSTAINABILITY



Measuring the food safety level and analysing trends requires long-term follow-up using same indicators. FAFSC planned the indicators thoroughly and based them on available data that were presumed to be available also in the future to ensure continuity of the Barometer. It has been in use already for more than ten years and it will remain in use as it has proven valuable for communicating the food safety level and changes in the level. The barometer was also increasingly used over years to assess control strategies, which further emphasizes its sustainability.



## REPLICABILITY AND UPSCALING

The Food Safety Barometer is well-established and similar barometers have been developed also for animal health and plant health in Belgium. While initial purpose to develop it was for communication of the food safety state with actors, lately it is increasingly used as a management tool in developing food safety control strategies.

Similar barometers can be used in other countries to assess food safety. Countries that have continuous digitalized collection of information within the food chain could automate the data intake on the food safety indicators. Countries with paper-based system could also collect information for some basic food safety indicators. However, a paper-based system is very arduous and do not support well a data-driven development of food control.

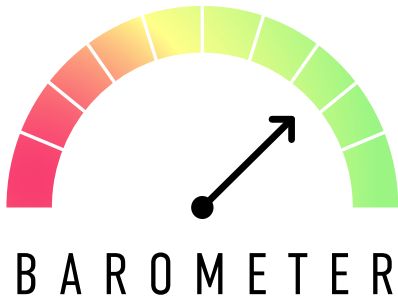
Successful use and sound interpretations of results from indicators requires a level of standardization of the food safety system. Inconsistent procedures may lead to biased results hampering the development of control strategies. On the other hand, measurements can support standardization, when results are interpreted with care. Competent authorities may consult guidelines establishing principles on measurement of performance (Codex, 2017) when planning a barometer. In the beginning, the barometer can contain only a few indicators and later be supplemented in line with resources and needs of the country.



## CONCLUSIONS

The Food Safety Barometer is a science-based and widely recognized tool that is used to communicate food safety with the society emphasizing the whole food chain through 30 indicators. The Food Safety Barometer indicators have provided a positive impact to the measurement of food safety and have increased the understanding of the food safety system in Belgium.

Measuring food safety benefits from indicators that are stable over time as it enables trend analyses. However, changes occur in the food chain and some of current risks can decrease while new ones can occur. This calls for a flexible system as some indicators may no longer be applicable and new indicators are needed to better demonstrate the current state of food safety (SciCom, 2018).



FOOD SAFETY



ANIMAL HEALTH



PLANT HEALTH



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## ACKNOWLEDGEMENTS

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