**PRINCIPLES AND GUIDELINES FOR MONITORING THE PERFORMANCE
OF NATIONAL FOOD CONTROL SYSTEMS**

CXG 91-2017

Adopted in 2017.

SECTION 1 INTRODUCTION

1.   An effective national food control system (NFCS) is essential for ensuring the safety and suitability of food for consumers and ensuring fair practices. An effective NFCS may employ different approaches, core elements, and components, as appropriate to the national circumstances, and as described in the *Principles and Guidelines for National Food Control Systems* (CXG 82-2013).

2.   The policy setting, design, implementation and other technical components of the NFCS should operate effectively over the course of time, and have the capacity and capability to undergo continuous improvement. As scientific and technical advances occur, it is important that the NFCS demonstrates its ability to adapt.

3.   The monitoring and system review function of the NFCS calls on the competent authority[1] to regularly assess the effectiveness and appropriateness of the NFCS in achieving its objectives of protecting the health of consumers and ensuring fair practices in the food trade.[2] The evidence generated through monitoring and system review informs the policy setting, system design, and implementation functions of the NFCS.

4.   This document presents a performance monitoring framework to support the monitoring and system review function of the NFCS as described in section 4.4 of CXG 82-2013. The guidance is not intended to be used as a basis for comparing systems or imposing barriers to trade.

5.   Many strategies for performance monitoring exist, but there is no guidance specific to performance monitoring for an NFCS. This document seeks to fill this gap.

6.   Other assessment tools, like the FAO/WHO food control system assessment tool, can be used in conjunction with performance monitoring to provide a comprehensive view of the NFCS.

SECTION 2 PURPOSE OF GUIDANCE

7.   This document describes a logical framework of planning, monitoring, and system review steps for performance monitoring of an NFCS and establishes a common understanding of performance monitoring principles, terminology, and best practices.

8.   The guidance is intended to support self-assessment of countries NFCS.

9.   This guidance focuses on planning steps within the performance monitoring framework that establish a foundation for assessing the effectiveness of the NFCS and for facilitating continuous improvement as appropriate.

10.   A competent authority can use this framework to implement monitoring and system review, or incorporate this approach to make existing processes more robust.

SECTION 3 DEFINITIONS[3]

Activity: Actions taken or work performed through which inputs are mobilized to produce specific outputs.

Assessment: A process of determining the presence or absence of a certain condition or component, or the degree to which a condition is fulfilled.

Effectiveness: The extent to which NFCS objectives or related outcomes were achieved, or, are expected to be achieved, taking into account their relative importance.

Indicator: Quantitative variable or qualitative factor that provides a simple and reliable means to measure achievement, to reflect the changes connected to activities, or to help assess the performance of a program or system.

Inputs: The financial, human, technical and material resources used for activities.

Outcome: Intended effects or results that contribute to achieving the NFCS Objectives. Outcomes may be categorized at different levels, such as ultimate, high-level, intermediate, preliminary, or initial.

Outputs: The products and services which result from activities; may also include changes resulting from activities which are relevant to the achievement of outcomes.

Performance monitoring: A continuous or ongoing process of collecting and analyzing data to compare how well the stated objectives and outcomes of the NFCS are achieved.

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[1] Throughout the document "competent authority" refers to one or more competent authorities.
[2] Throughout this document, the term "Objectives" refers to the NFCS Objectives *Principles and Guidelines for National Food Control Systems* (CXG 82-2013).
[3] Most definitions were adapted from OECD. 2002. "Glossary of Key Terms in Evaluation and Results-Based Management." Paris: OECD/DAC.

SECTION 4 PRINCIPLES OF THE PERFORMANCE MONITORING FRAMEWORK

11. In a comprehensive approach, a competent authority would monitor its performance across all components of the NFCS. However, depending on the priorities and capabilities of the competent authority, it may be more practical and affordable to apply the performance monitoring framework in a phased or targeted approach. A targeted approach is application of performance monitoring to specific programs or components of the NFCS. A phased approach is a gradual expansion of the performance monitoring framework as capacity within a country grows.

12. Regardless of whether it is used in a comprehensive, phased, or targeted approach, the performance monitoring framework is characterized by the following principles:

Principle 1   Relevancy

13. It is customized to the unique needs and structure of the NFCS, and uses information collected from within and outside the system to identify gaps, optimize operations, and promote continuous improvement.

Principle 2   Transparency

14. It is open to consultation and review by relevant national stakeholders during multiple stages of the process, while respecting legal requirements to protect confidential information as appropriate.

Principle 3   Efficiency and Reliability

15. It should operate within its current capacity to remain practicable and affordable. It builds on existing data collection and program management and utilizes appropriate external data sources to assess the performance of its NFCS. Attention should be given to the quality and reliability of the data.

Principle 4   Responsiveness

16. It is adaptive to changes to the NFCS and the environment in which it operates and accommodates revisions to both the outcomes sought, associated activities, and the indicators applied.

SECTION 5   PERFORMANCE MONITORING FRAMEWORK FOR AN NFCS

17. Countries should have established an NFCS or components of an NFCS prior to using this framework.

18. The performance monitoring framework presents a cyclical process (refer fig 1) that includes three broad tasks: planning, monitoring, and system review. Performance monitoring is an on-going process, where each step feeds into the next step in the cycle and will be revisited over time.

- Through the planning steps, the competent authority identifies specific and related outcomes through which the NFCS contributes to its objectives and identifies indicators that can measure progress toward the outcomes. The planning steps establish a foundation for monitoring and system review.

- Through the monitoring steps, the competent authority collects data and generates the information necessary.

- Through the system review steps, the competent authority uses information generated through the monitoring steps to assess the effectiveness and appropriateness of the NFCS. This can confirm that the relevant component(s) are operating as intended, and facilitate continuous improvement as necessary.

Figure 1: Performance Monitoring Framework
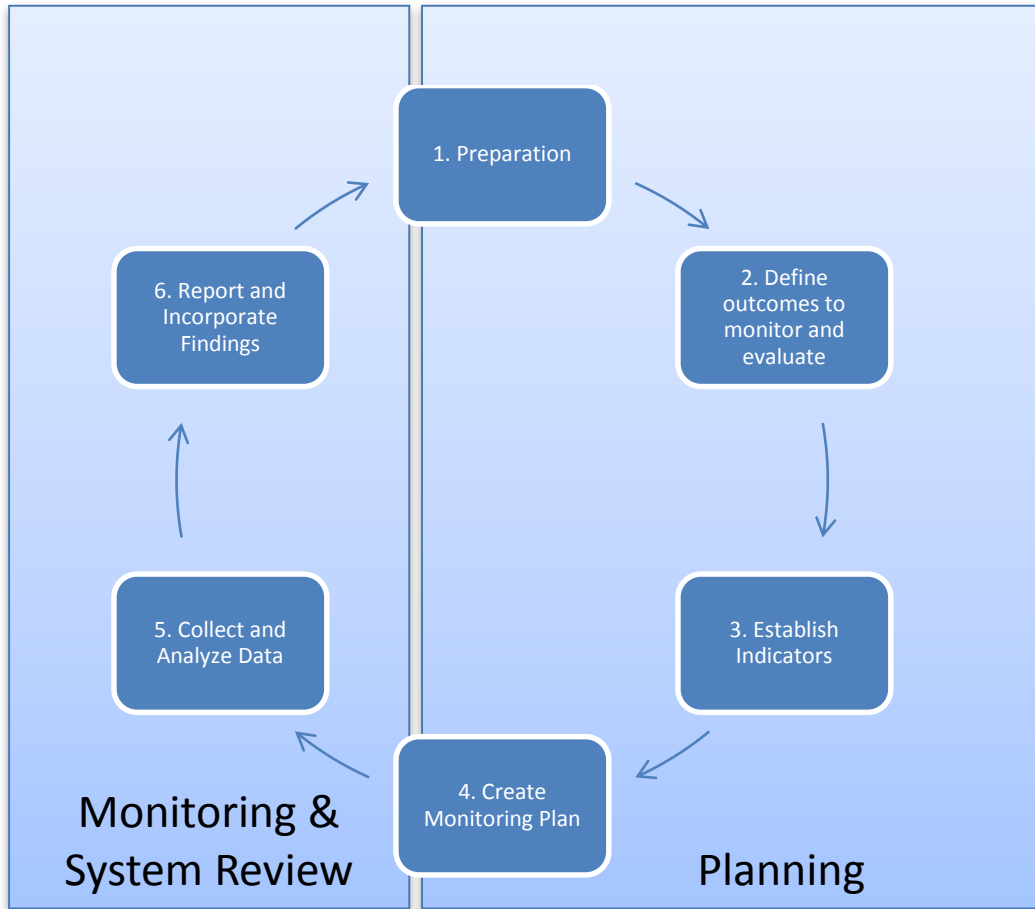
SECTION 5.1   PLANNING STEPS

19.   The planning steps are arranged in logical order, in which a preceding step supports or enables the next step. For example, it is necessary to identify the intended outcomes (step 2) before identifying indicators to measure progress toward those outcomes (step 3).

20.   Upon completion of these steps, the competent authority will have clearly defined the specific outcomes that the NFCS is designed to achieve and developed a plan for monitoring progress towards achieving these outcomes.

Step 1: Preparation

21.   Effective performance monitoring requires organisational commitment, established processes, and sufficient resources and technical capacity. The first step of the performance monitoring framework is to conduct a assessment to determine the competent authority's current capacity for monitoring and system review. The following paragraphs may assist the competent authority in assessing their readiness to design and implement a performance monitoring framework.

22.   Organizational commitment is essential for ensuring that monitoring and system review are prioritized and resourced as an integral component of the NFCS. The following questions can help the competent authority to assess the level of organizational commitment to monitoring and system review:

- What are the legislative or policy objectives of the NFCS and how does the competent authority support those objectives?

- How does the competent authority intend to support performance monitoring at various levels of the NFCS?

- How does the competent authority intend to use performance monitoring data (e.g. to assess the effectiveness of the NFCS and take preventive or corrective action or improve the system as appropriate)?

23. Established processes for data collection and program management can be used for monitoring and system review. The following questions can help the competent authority to assess established processes that support monitoring and system review:

- What types of data are currently being collected?

- How is the data used (i.e. what types of information is being generated and for what purpose)?

- What are the existing processes for data collection and analysis?

- What are the existing processes for ensuring data quality?

- What are the existing processes for reporting data on results or progress toward goals or objectives?

- How is data currently being used to assess the effectiveness of different programs or components?

24. Monitoring and system review requires sufficient financial and human resources with relevant expertise to support the collection and use of data. The following questions can help the competent authority to assess existing resources and technical capacity:

- What resources (financial, human, technical and material) are available to support monitoring and system review? How can existing resources be leveraged if necessary?

- Does the competent authority have access to individuals with expertise in strategic planning, performance management, program management, analysis, and data management?

25. If the competent authority lacks sufficient capacity or resources to monitor performance of the entire NFCS, the competent authority may implement monitoring and system review in a phased or targeted approach, beginning with a limited number of priority components. The competent authority may use CXG 82-2013 in conjunction with national goals to identify priority components for a phased or targeted approach.

26. If the competent authority decides to implement monitoring and system review in a phased or targeted approach, the competent authority should consider steps to address these challenges to enable comprehensive performance monitoring at a later date.

- If there is insufficient human resource capacity, the competent authority should develop a plan to develop capacity where necessary, setting the shortest possible deadlines for completion.

- If there are insufficient financial resources available, the competent authority should seek out additional funding from national or international sources, setting the shortest possible deadlines for completion.

27. On a regular basis, the competent authority should revisit the above assessment. As capacity for monitoring and system review improves, or becomes available, the competent authority may consider a more comprehensive approach.

Step 2: Define Outcomes to Monitor and Evaluate

28. Monitoring and system review should go beyond measuring the outputs of activities and focus on measuring intended effects or outcomes. Outcomes capture what has to be achieved for success, as opposed to what processes or steps need to be completed. By defining and monitoring outcomes, a competent authority can make more informed decisions and better target its programs and resources to achieve the objectives it is seeking.

29. In addition to capturing what is to be achieved, outcomes should follow SMART criteria.

- Specific: What exactly is going to be achieved?

- Measurable: Can the outcome be measured through qualitative or quantitative indicators?

- Attainable: Is the outcome in line with the competent authority's competencies and authorities?

- Relevant: Will achieving an outcome contribute to achieving the NFCS Objectives?

- Time-bound: Can a timescale be defined for achieving the outcome?

30. The competent authority should engage relevant stakeholders in a participatory process for the identification and general understanding of the outcomes to be achieved.

31. The starting point for defining outcomes will depend on the competent authority's approach to monitoring and system review. In a comprehensive approach, a competent authority may start by defining an NFCS Objective or a national goal as the highest-level outcome to be achieved. If the competent authority decides to implement monitoring and system review in a phased or targeted approach, it should identify the highest-level outcome that is applicable to their approach.

32. After defining the starting point, the competent authority should ask "How will this be achieved?" to identify the next level of outcomes that contribute to achieving the highest-level outcome. There may be several intermediate or lower-level outcomes that contribute to achieving the highest-level outcome. The competent authority can ensure that all of the relevant outcomes have been identified by asking "What else is necessary?" to achieve the highest-level outcome.

33. This process of asking "How will this be achieved?" and "What else is necessary?" should be repeated for each intermediate and lower-level outcome until no further outcomes can be identified. For outcomes at the lowest-levels, the answer to "How will this be achieved?" will usually be outputs or activities.

34. Through this process, the competent authority will develop an outcome framework that visually reflects the causal or logical processes that contribute to achieving the highest-level outcome. When read from the top down, an outcome framework explains how each outcome will be achieved – by first achieving the outcomes at the next lowest level. When read from the bottom up, it explains why each outcome is important – because it contributes to achieving an outcome at the next highest level. See Appendix A for an example of a simplified outcome framework.

35. There are other approaches that may be used for identifying and visually displaying outcomes and their causal relationships, including logic models, program theories, or theory of changes.

36. Some outcomes may be beyond the full control of the competent authority in that they rely on other government entities or stakeholders to be fully accomplished. Such outcomes can still be monitored if they can be significantly impacted through the competent authority's activities.

37. After identifying outcomes, the competent authority should map current activities that contribute to achieving the outcomes, assess gaps, and identify additional activities that could further contribute. Once current and potential activities have been identified, a competent authority can prioritize and schedule activities.

Step 3: Establish Indicators

38. Indicators are means for measuring achievement, reflecting changes, or assessing performance. Indicators should be established for each individual outcome.

39. Indicators may also be established for inputs and outputs to allow the competent authority to monitor how specific activities are contributing to specific outcomes. Various tools may be used to manage inputs and outputs, such as budgets, staffing plans, and activity plans.

40. Where there is limited capacity for monitoring and system review, the competent authority may choose to start with a limited number of indicators and increase the number of indicators as capacity expands.

41. As part of a phased or targeted approach, the competent authority may initially establish indicators for which there are existing processes for data collection and analysis or addressing priority components of the NFCS.

42. As the global knowledge base on indicators for NFCSs develops, the competent authority should consider these indicators as appropriate.

43. The process for selecting indicators should build on the review of established data collection processes conducted during the assessment phase.

44. The competent authority should convene a group of technical, substantive, and policy experts to brainstorm potential indicators for each of the outcomes identified in Step 2. Some examples of indicators are included in Appendix B.

45. Indicators may be qualitative or quantitative and should fulfil the following criteria:

- unambiguous, easy to interpret, monitor and transparent.
- closely linked to the outcomes (including timing) and meaningful from an organisational perspective.
- amenable to independent validation and or verification.
- Obtainable given available resources.

46. Among the many potential indicators that meet these criteria, the competent authority should consider the following information to choose the most direct indicators for which it is technically and financially capable of collecting and analysing data.

- Frequency of data collection
- Financial cost of data collection
- Challenges for data collection or limitations to interpreting the data.

47. Measurement influences behaviour, so it is important to choose indicators that will incentivize the actions that will lead to achieving the intended outcomes.

Step 4: Create Monitoring Plan

48. To ensure that indicators are successfully integrated into the monitoring and system review function of a competent authority, a performance monitoring plan (PMP) should be created to provide detailed information on how performance data will be collected and analysed. For each indicator, the PMP should include:

- Explanation or definition of indicator

- Source of data

- Frequency of data collection

- Methods for data collection

- Methods for ensuring data quality

- Methods for data analysis

- Roles and responsibilities for data collection

- Roles and responsibilities for data analysis

- Roles and responsibilities for ensuring data quality

- Baseline data

- Targets.

49. The competent authority should collect baseline data for each indicator. Baselines establish the current situation and are used as a starting point against which future performance will be measured. Additionally the collection of baseline data under a pilot program can serve to identify indicators that may not work.

50. After baseline data has been collected and as appropriate, the competent authority should establish targets for indicators. A target is a specified result that is to be realized within a specific timeframe. For some indicators, the target might simply be to "increase", "maintain", or "decrease" from the baseline.

51. When establishing targets, the competent authority should consider the baseline levels, the desired level of improvement, and the resource levels needed to meet the target.

52. For indicators with long-term targets, it may be helpful to identify sub-targets or milestones.

SECTION 5.2   MONITORING & SYSTEM REVIEW STEPS

53. Completing the steps above provides a foundation for making the monitoring and system review steps of the NFCS operational. These system review steps include: data collection, data analysis, reporting findings, and incorporating findings.
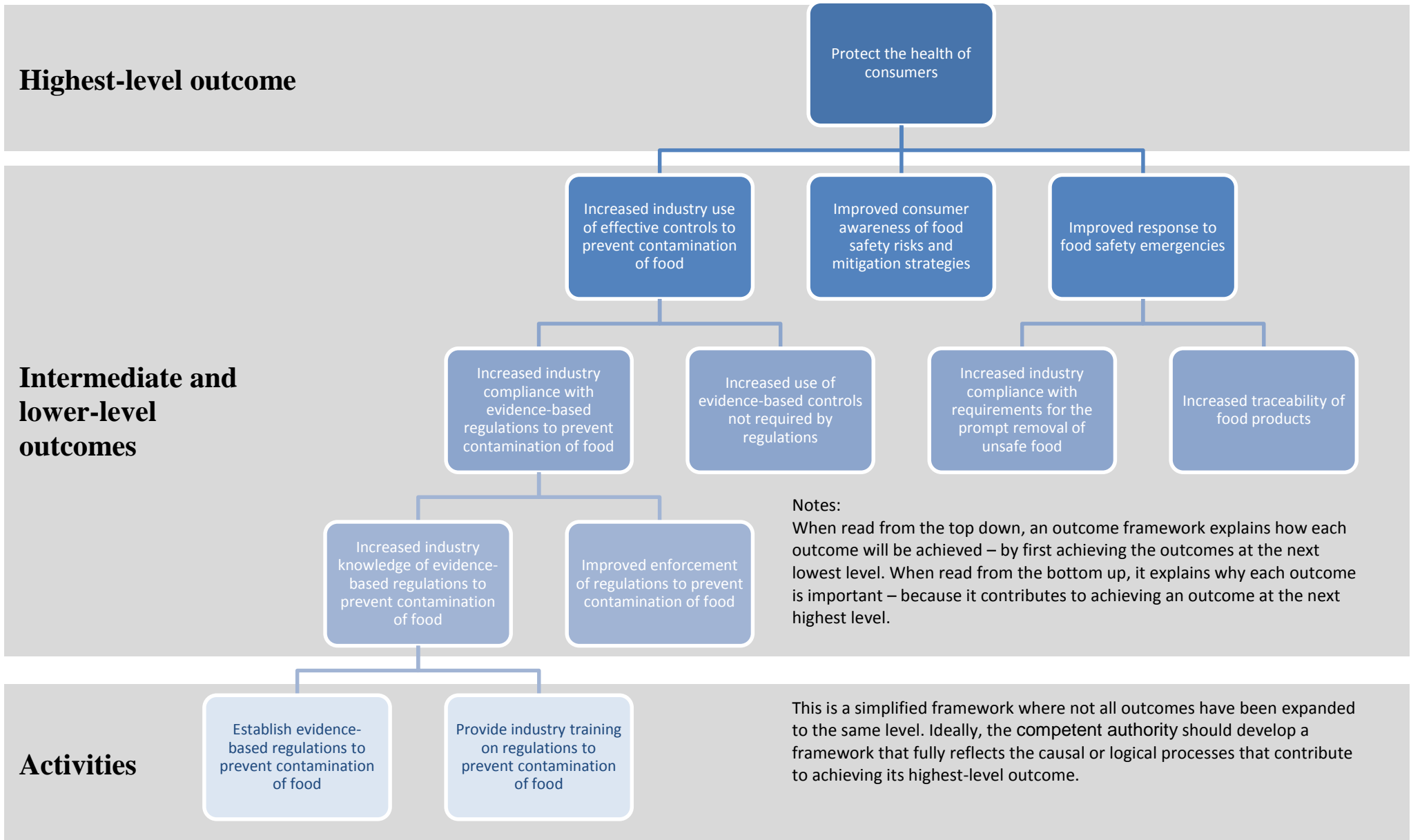
Step 5: Collect and Analyse Data

54. The PMP describes roles and responsibilities for data collection and analysis. Often, raw data will need to be managed in order to calculate indicators. Depending on the nature of the indicators, data analysis may include comparing results to baselines and targets and assessing trends over time.

Step 6: Report and incorporate findings

55. There are multiple uses for the information produced through monitoring and system review. Performance data should be presented in a clear and understandable format that is targeted to specific audiences and may be presented in various formats as appropriate (e.g. written summaries, executive summaries, oral presentations, visual presentations, dashboards).

56. Monitoring and system review is only useful if the findings are used to inform and influence the policy setting design and implementation of the NFCS. Simply reporting the data is not enough. The competent authority should institute approaches that will ensure the full integration of performance data. Some examples include:

- Conducting formal, regularly scheduled performance review meetings to assess continued appropriateness of activities and relevance of selected outcomes and associated indicators

- Integrating performance data into resource prioritization and budgeting decisions

- Identifying and sharing best practices and lessons learned

- Identifying gaps or problems that could be addressed with capacity building

- Assessing other opportunities within the competent authority to use performance data.

57. When the findings from performance monitoring and systems review reflect unfavourable results, problem-solving methods, such as root cause analysis, may be used to identify corrective actions.

58. As the use of performance data results in changes to policies, system design, or program implementation, the competent authority should revisit the planning steps.

- With any refinement or shift in national strategies or goals for the NFCS, the competent authority should review the outcome framework. Irrelevant outcomes should be discarded and new outcomes should be incorporated as necessary.

- On a regular basis, the competent authority should also review the indicators used to monitor outcomes to ensure that they are meaningful and appropriate. Indicators that are not meaningful should be discarded and more appropriate indicators should be incorporated as necessary.

- The PMP should be updated on a regular basis to reflect institutional changes, technological advancements, or evolving methods for data analysis.

59. Findings from monitoring and system review and subsequent changes to the NFCS should be communicated effectively and efficiently to ensure the clear exchange of information and engagement between all relevant stakeholders in the NFCS.

APPENDIX A: ILLUSTRATIVE EXAMPLE OF A SIMPLIFIED OUTCOME FRAMEWORK

Highest-level outcome

Protect the health of consumers

Intermediate and lower-level outcomes

Increased industry use of effective controls to prevent contamination of food

Improved consumer awareness of food safety risks and mitigation strategies

Improved response to food safety emergencies

Increased industry compliance with evidence-based regulations to prevent contamination of food

Increased use of evidence-based controls not required by regulations

Increased industry compliance with requirements for the prompt removal of unsafe food

Increased traceability of food products

Increased industry knowledge of evidence-based regulations to prevent contamination of food

Improved enforcement of regulations to prevent contamination of food

Notes:
When read from the top down, an outcome framework explains how each outcome will be achieved – by first achieving the outcomes at the next lowest level. When read from the bottom up, it explains why each outcome is important – because it contributes to achieving an outcome at the next highest level.

Activities

Establish evidence-based regulations to prevent contamination of food

Provide industry training on regulations to prevent contamination of food

This is a simplified framework where not all outcomes have been expanded to the same level. Ideally, the competent authority should develop a framework that fully reflects the causal or logical processes that contribute to achieving its highest-level outcome.

APPENDIX B: ILLUSTRATIVE EXAMPLES OF INDICATORS FOR SELECTED OUTCOMES

The following table provides illustrative examples of indicators for selected outcomes from Appendix A. When applying the performance monitoring framework, each country will establish indicators specific to their desired outcomes.

Examples of Outcomes	Examples of Indicators
Protect the health of consumers	• incidence of foodborne illness (# of cases per 100,000 population) (e.g., Salmonella) • average dietary exposure to chemical contaminants mg/kgbw per day) (e.g., organophosphate pesticides)
Increased industry use of effective controls to prevent contamination of food	• percent of samples that test positive for microbial contaminants (e.g., Salmonella spp.) • percent of samples that test positive for chemical contaminants (e.g., organophosphate pesticide residues)
Increased industry compliance with evidence-based regulations to prevent contamination of food	• percent of farms using specified controls to prevent salmonella • percent of inspections for which food producers were found to be compliant with pesticide regulations • percent of inspections for which there is noncompliance by industry
Increased industry knowledge of evidence-based regulations to prevent contamination of food	• percent of food producers that are aware of current evidence-based regulations
Improved response to food safety emergencies	• percent of recalled products that were recovered and destroyed or disposed of properly • average response time between the recognition of a food safety concern and initiation of recall
Increased traceability of food products	• existence of a food traceability tool/mechanisms (yes/no) • percent of domestic food producers with traceability practices • percent of imported foods that are tracked or registered using identifiers (e.g., barcodes, RFID)