

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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Agenda Item 5

CX/FICS 16/22/4
November 2015

CODEX COMMITTEE ON FOOD IMPORT AND EXPORT INSPECTION AND CERTIFICATION SYSTEMS

Twenty-second Session

Melbourne, Australia, 6-12 February, 2016

PROPOSED DRAFT GUIDANCE FOR MONITORING THE PERFORMANCE OF NATIONAL FOOD CONTROL SYSTEMS

Prepared by the Electronic Working Group led by the United States of America

(At Step 3)

Governments and interested international organizations are invited to submit comments on the attached Draft Proposed Guidance for Monitoring the Performance of National Food Control Systems at Step 3 (see Appendix I) and should do so in writing in conformity with the Uniform Procedure for the Elaboration of Codex Standards and Related Texts (see *Procedural Manual of the Codex Alimentarius Commission*) to: Codex Australia, Australian Government Department of Agriculture & Water Resources, GPO Box 858, Canberra ACT, 2601 (E-mail: codex.contact@agriculture.gov.au) with a copy to: The Secretariat, Codex Alimentarius Commission, Joint WHO/FAO Food Standards Programme, FAO, Rome, Italy, email codex@fao.org by **8 January 2016**.

Format for submitting comments: In order to facilitate the compilation of comments and prepare a more useful comments document, Members and Observers, which are not yet doing so, are requested to provide their comments in the format outlined in the Annex I to this document.

Please do not reproduce the document in track changes as this substantially increases the costs of translation and printing.

BACKGROUND

1. The 19th (2012) Session of the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) considered a proposal¹ presented by the United States to develop performance metrics that enable countries to assess the capacity of their own or their trading partners' national food control systems (NFCS). Two types of indicators were proposed: operational performance measures to demonstrate that inspection activities were carried out according to established policy and, regulatory performance indicators (later changed to public health outcome measures) to demonstrate the effectiveness of the NFCS in achieving food safety, food suitability and technical outcomes. The United States noted that the guidance to be developed would complement the work CCFICS was then undertaking to develop the *Principles and Guidelines for National Food Control Systems* (CAC/GL 82-2013).² The Committee agreed that it was premature to start new work on this subject given the state of development of CAC/GL 82-2013 but requested the United States to develop a questionnaire on how countries currently assess and manage the performance of their NFCS and, based on the results of the questionnaire, to prepare a detailed Discussion Paper (including examples of how performance indicators are used) for further consideration by CCFICS at its next Session.

¹ REP 12/FICS, paras 56-62

² Adopted by the 36th Session of the CAC (REP 13/CAC, Appendix III)

2. CCFICS20 (2013) considered the *Discussion Paper on Monitoring Regulatory Performance of National Food Control Systems*³. The Paper presented the results of the survey questionnaire on how countries currently assess and manage the performance of their NFCS and presented specific examples of Public Health Outcome Measures (PHOM) and Operational Performance Measures (OPM). The Committee considered it necessary to further refine the scope of the new work, narrowed to apply to the monitoring of an NFCS within a country for the purposes of continuous improvements, before agreeing to send it to the Commission for approval. The Committee requested the United States, with the assistance of an electronic Working Group (eWG) to revise the project document and prepare an outline of a proposed *Principles and Guidelines for Monitoring Regulatory Performance of National Food Control Systems*, for consideration at the Committee's next Session.

3. Between the 20th and 21st Sessions of CCFICS two informal workshops were held (hosted by Costa Rica and the European Commission) to consider the area of performance monitoring of NFCS in order to better inform Members regarding this area and to assist the eWG in carrying out its work.

4. CCFICS21(2014) Session, considered the *Discussion Paper on Principles and Guidelines for Monitoring Regulatory Performance of National Food Control Systems*.⁴ The paper suggested that performance indicators used in any self-evaluation of an NFCS should focus primarily on public health outcomes (or a proxy of these) to demonstrate the NFCS effectiveness in achieving food safety, suitability and technical outcomes; noted that more operationally aligned performance indicators are also useful to monitor trends in the levels of compliance, both with respect to the competent authority's continuous prioritizing of verification activities and identifying program resources; noted the need to establish baseline performance measures to ensure that performance measures were relevant, transparent, practical and affordable, and that process for data collection and analysis should be both credible and efficient. The Committee agreed to undertake new work on the development of *Guidance for Monitoring the Performance of National Food Control Systems*, submitting the proposal including the Project Document to the Codex Executive Committee and the Commission for critical review and approval at their next Session. The Committee also agreed to establish an eWG⁵, chaired by the United States, to prepare a proposed draft standard for circulation at Step 3 for comments and consideration by CCFICS at its next Session.

5. The United States circulated a proposed draft to the eWG for comments, which were incorporated into a second proposed draft. The second proposed draft was distributed in early June 2015. A physical working group⁶, chaired by Australia and hosted by the United Kingdom met in London, United Kingdom from 20-21 July, 2015, and considered the revised proposed draft. The proposed draft contained in Appendix I reflects the contributions from delegations that participated in these working groups.

6. Performance monitoring is relatively new to the field of food safety. Performance data on NFCSs are not collected strategically on a global scale and in many countries data limitations hamper the ability to monitor and evaluate food safety performance.⁷ Given the importance of food safety accountability, there is rising interest in performance monitoring for NFCSs and there are increased opportunities for development of these systems. Currently, countries are at various stages with regard to their capacity for and development of performance monitoring systems. As the field evolves, it will be useful to find consensus on principles and best practices for performance monitoring of NFCSs. This in no way reduces the importance of developing Codex guidance in this critical area but does indicate the importance of updating the guidance in a timely manner.

³ CX/FICS 13/20/5

⁴ CX/FICS 14/21/4

⁵ Argentina, Australia, Belgium, Belize, Brazil, Canada, Denmark, Ecuador, European Union, France, Germany, Honduras, India, Indonesia, Ireland, Japan, Korea, Kyrgyz Republic, Mexico, Micronesia, Netherlands, New Zealand, Norway, Philippines, PNG, Solomon Islands, South Africa, Spain, Sweden, Switzerland, Thailand, IACFO, FAO, Food Drink Europe, OIE

⁶ Australia, Belgium, Denmark, European Commission, Germany, Ghana, India, Ireland, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, South Africa, Spain, Thailand, United Kingdom, the United States, Switzerland and the FAO

⁷ Jean-Charles Le Vallée and Sylvain Charlebois. 2014 World Ranking: Food Safety Performance. Ottawa: The Conference Board of Canada, 2014.

RECOMMENDATION

7. Attached for consideration by the Committee (Appendix I) is *Draft Proposed Guidance for Monitoring the Performance of National Food Control Systems*. The proposal contains: information on the purpose of performance monitoring; definitions; a set of principles; a performance monitoring framework for the national food control systems, including steps for planning, monitoring, and systems review; and appendices that provide a simplified outcome framework with indicator examples and additional resources. This guidance is intended to support the monitoring and system review function of the NFCS as described in section 4.4 of CAC/GL 82-2013.

8. The Committee is invited to consider the proposed draft presented in Appendix I, at Step 3, and as appropriate, advance the document in the Codex Step Process.

GENERAL GUIDANCE FOR THE PROVISIONS OF COMMENTS

In order to facilitate the compilation of comments and prepare more useful comments' document, Members and Observers, which are not yet doing so, are requested to provide their comments under the following headings:

- (i) General Comments
- (ii) Specific Comments

Specific comments should include a reference to the relevant section and/or paragraph of the document that the comments refer to.

When changes are proposed to specific paragraphs, Members and Observers are requested to provide their proposal for amendments accompanied by the related rationale. New texts should be presented in **underlined/bold font** and deletion in ~~striketrough font~~.

In order to facilitate the work of the Secretariats to compile comments, Members and Observers are requested to refrain from using colour font/shading as documents are printed in black and white and from using track change mode, which might be lost when comments are copied / pasted into a consolidated document.

In order to reduce the translation work and save paper, Members and Observers are requested not to reproduce the complete document but only those parts of the texts for which any change and/or amendments is proposed.

Example of how comments should be prepared

SECTION 2 OBJECTIVE

Paragraph 4 - At the end of the last sentence add the words "and can be applied as relevant to any inspections of establishments or other facilities that may occur as part of an audit." So the last sentence would read "This annex applies equally to assessments carried out onsite or by documentary review alone **and can be applied as relevant to any inspections of establishments or other facilities that may occur as part of an audit**".

Rationale: To remove duplication of concepts – standardized and consistent. Efficiency is an outcome of following these guidelines and should be included here. To clarify the use of inspection as an associated tool not the prime focus.

DRAFT PROPOSED GUIDANCE FOR MONITORING THE PERFORMANCE OF NATIONAL FOOD CONTROL SYSTEMS

SECTION 1 INTRODUCTION

1. An effective national food control system (s) (NFCS) is essential for ensuring the safety and suitability of food for consumers. An NFCS may employ different approaches, core elements, and components, as appropriate to the national circumstances, and as described in the Codex *Principles and Guidelines for National Food Control Systems* (CAC/GL 82-2013).
2. The NFCS's policy setting, design, implementation and other technical components 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 to regularly assess the effectiveness of the NFCS in achieving its objectives of protecting the health of consumers and ensuring fair practices in the food trade.⁸ 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 CAC/GL 82-2013. The guidance is intended to support self-assessment of a country's NFCS and 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 can be used in conjunction with performance monitoring to provide a comprehensive view of the NFCS (see Appendix B).

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. This document 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.
9. 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 DEFINITIONS⁹

Activity: Actions taken or work performed through which inputs (such as funds, staff, and other types of resources) 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.

Efficiency: A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.

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.

⁸ Throughout this document, the term "Objectives" refers to the NFCS Objectives as defined in paragraph 82 of *Principles and Guidelines for National Food Control Systems* (CAC/GL 82-2013).

⁹ Most definitions were adapted from OECD. 2002. "Glossary of Key Terms in Evaluation and Results-Based Management." Paris: OECD/DAC.

Inputs: The financial, human, 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, capital goods, 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.

SECTION 4 PRINCIPLES OF THE PERFORMANCE MONITORING FRAMEWORK

10. 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.

11. 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

12. 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

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

Principle 3 Efficiency

14. It builds on existing data collection and program management and utilizes appropriate external data sources to assess the performance of its NFCS.

Principle 4 Responsiveness

15. 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.

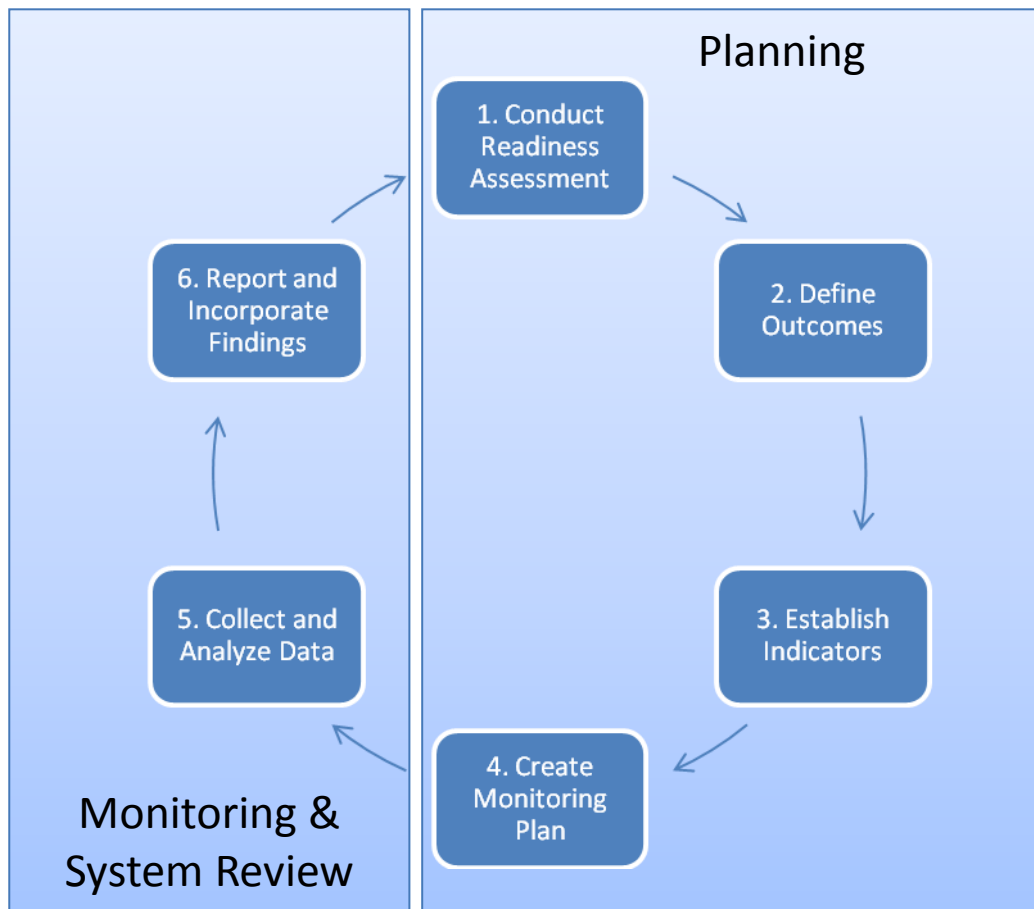
SECTION 5 PERFORMANCE MONITORING FRAMEWORK FOR AN NFCS

16. Countries must have established an NFCS or components of an NFCS prior to using this framework.

17. The performance monitoring framework presents a cyclical process that includes three broad tasks: planning, monitoring, and system review. Performance monitoring is an ongoing 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 to assess progress.
- Through the system review steps, the competent authority uses information generated through the monitoring steps to assess the effectiveness of the NFCS and facilitate continuous improvement as necessary.

Figure 1: Performance Monitoring Framework



SECTION 5.1 PLANNING STEPS

18. 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).

19. 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: Conduct Assessment

20. 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 readiness assessment to determine the competent authority's current capacity for monitoring and system review. The following paragraphs may assist the competent authority in conducting a readiness assessment; other resources are listed in Appendix B.

21. Organizational commitment is essential for ensuring that monitoring and system review are prioritized and funded 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)?

22. 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 are 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 are data currently being used to assess the effectiveness of different programs or components?

23. 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 human resource capacity and financial resources 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?

24. 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 CAC/GL 82-2013 in conjunction with national goals to identify priority components for a phased or targeted approach.

25. 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.
- If there are insufficient financial resources available, the competent authority should seek out additional funding from national or international sources.

26. On a regular basis, the competent authority should revisit the readiness assessment. As capacity for monitoring and system review improves, the competent authority may consider a more comprehensive approach.

Step 2: Define Outcomes to Monitor and Evaluate

27. 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. See Appendix A for some examples of outcomes. By defining and monitoring outcomes a competent authority can make more informed decisions and better target its programs and resources to achieve the impact it is seeking.

28. 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?

29. The competent authority should engage relevant stakeholders in a participatory process to ensure that there is consensus on the outcomes to be achieved.

30. 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 unique approach.

31. 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.

32. 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.

33. Through this process, the competent authority will develop an outcome framework that reflects the causal or logical processes that contribute to achieving the highest-level outcome. These causal relationships are sometimes referred to as a logic model, program theory, or theory of change. See Appendix A for an example of a simplified outcome framework.

34. 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.

35. 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.

36. 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

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

38. 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.

39. 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.

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

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

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

43. 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.

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

- Clear: Indicators are unambiguous, easy to interpret and transparent.
- Relevant: Indicators are closely linked to the outcomes and meaningful from an organisational perspective.
- Verifiable: Indicators are [capable of, subject to] amenable to independent validation.

45. 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

46. 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

47. 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 data analysis
- Roles and responsibilities for data collection
- Roles and responsibilities for data analysis
- Roles and responsibilities for ensuring data quality
- Baseline values
- Target values

48. 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. Collecting baseline data can serve as a pilot to identify indicators that may not work.

49. 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 value.

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

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

SECTION 5.2 MONITORING & SYSTEM REVIEW STEPS

52. Completing the steps above provides a foundation for operationalizing the monitoring and system review steps of the NFCS including data collection, data analysis, reporting findings, and incorporating findings.

53. The PMP describes roles and responsibilities for data collection and analysis. Often, raw data will need to be manipulated 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.

54. 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).

55. Monitoring and system review is only useful if the findings are used to inform and influence operations. 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
- 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 CA to use performance data

56. 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.

57. 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 stakeholders in the NFCS.

APPENDIX A: SIMPLIFIED OUTCOME FRAMEWORK WITH INDICATOR EXAMPLES

Highest-level outcome

Protect the health of consumers

A

The following page contains indicator examples for outcomes labelled with letters A through F.

Intermediate and lower-level outcomes

B

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

E

C

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

F

D

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

Improved enforcement of regulations to prevent contamination of food

Activities

Establish evidence-based regulations to prevent contamination of food

Provide industry training on regulations to prevent contamination of food

Note: 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.

Outcome	Indicators
A Protect the health of consumers	<ul style="list-style-type: none"> • incidence of foodborne illness (# of cases per 100,000 population) (e.g., Salmonella) • mortality rate associated with chemical contamination of food (# of deaths per 100,000 population) • average dietary exposure to chemical contaminants (# nmol per day) (e.g., organophosphate pesticides)
B Increased industry use of effective controls to prevent contamination of food	<ul style="list-style-type: none"> • 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)
C Increased industry compliance with evidence-based regulations to prevent contamination of food	<ul style="list-style-type: none"> • percent of farms using specified controls to prevent salmonella • percent of inspections for which food producers were found to be compliant with pesticide regulations
D Increased industry knowledge of evidence-based regulations to prevent contamination of food	<ul style="list-style-type: none"> • percent of food producers that are aware of current evidence-based regulations
E Improved response to food safety emergencies	<ul style="list-style-type: none"> • 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
F Increased traceability of food products	<ul style="list-style-type: none"> • percent of domestic food producers with traceability practices • percent of imported foods that are tracked or registered using identifiers (e.g., barcodes, RFID)

APPENDIX B

ADDITIONAL RESOURCES

General Resources

- UNDP. 2009. A Users' Guide to Measuring Public Administration Performance. Available from: http://procurement-notice.undp.org/view_file.cfm?doc_id=5302.
- World Bank. 2004. Ten steps to a results-based monitoring and evaluation system: a handbook for development practitioners. Washington, DC: The International Bank for Reconstruction and Development, World Bank.
- Mackay, Keith. 2007. How to Build M&E Systems to Support Better Government. Washington, DC: The International Bank for Reconstruction and Development, World Bank.
- Dawn Roberts and Nidhi Khattri. 2012. Designing a Results Framework for Achieving Results: a How-To Guide. Washington, DC: Independent Evaluation Group, International Bank for Reconstruction and Development, World Bank. Available from: http://siteresources.worldbank.org/EXTEVACAPDEV/Resources/designing_results_framework.pdf.
- Lisa Wyatt Knowlton, Cynthia C. Phillips. 2013. The Logic Model Guidebook: Better Strategies for Great Results (2nd edition). Sage Publications Inc.
- Annie Millar, Ronald S Simeone, John T Carnevale, Logic Models: a systems tool for performance management: Evaluation and program Planning, 24 (001) p73.
- MANCP Network. Developing Objectives and Indicators. April 2015. Version 1.

Resources for Readiness Assessment

- Food safety core capability questions and criteria in the World Health Organization's International Health Regulations National Capacity Monitoring Survey
- The FAO/WHO Food Control System Assessment tool (under development) provides a comprehensive approach to for a detailed and evidence based assessment of the systems and its various components, also allowing measurement of progress over time.
- World Health Organization. 2008. Assessing the national health information system: an assessment tool. Available from: <http://www.who.int/healthmetrics/tools/hisassessment/en/>.

Resources on Indicators

- Jean-Charles Le Vallée and Sylvain Charlebois. 2014 World Ranking: Food Safety Performance. Ottawa: The Conference Board of Canada, 2014.
- Jean-Charles Le Vallée and Sylvain Charlebois. Benchmarking Global Food Safety Performances: The Era of Risk Intelligence. *Journal of Food Protection*, Vol. 78, No. 10, 2015, Pages 1896–1913.
- Wilmart, Olivier, Xavier Van Huffel, Herman Diricks, Vera Huyshauer, David Michelante, Claude Bragard, Bruno Schiffers, et al. 2015. "Measuring the General Phytosanitary Situation: Development of a Plant Health Barometer." *European Journal of Plant Pathology* 141 (2): 349–360.
- Baert, Katleen, Xavier Van Huffel, Olivier Wilmart, Liesbeth Jacxsens, Dirk Berkvens, Herman Diricks, André Huyghebaert, and Mieke Uyttendaele. 2011. "Measuring the Safety of the Food Chain in Belgium: Development of a Barometer." *Food Research International* 44 (4): 940–950.
- Depoorter, Pieter, Xavier Van Huffel, Herman Diricks, Hein Imberechts, Jeroen Dewulf, Dirk Berkvens, and Mieke Uyttendaele. 2015. "Measuring General Animal Health Status: Development of an Animal Health Barometer." *Preventive Veterinary Medicine* 118 (4): 341–350.
- Sylvain Charlebois, Brian Sterling, Sanaz Haratifar, and Sandi Kyaw Naing. 2014. Comparison of Global Food Traceability Regulations and Requirements. *Comprehensive Reviews in Food Science and Food Safety* 13:1104-1123.