Workshop on the Implementation of a National Quality Assurance Framework for Official Statistics in countries of the Africa Region

Addis Ababa, Ethiopia, 6-9 December 2022

Session 3.2: Introduction of tools and of the Roadmap for the implementation of NQAF

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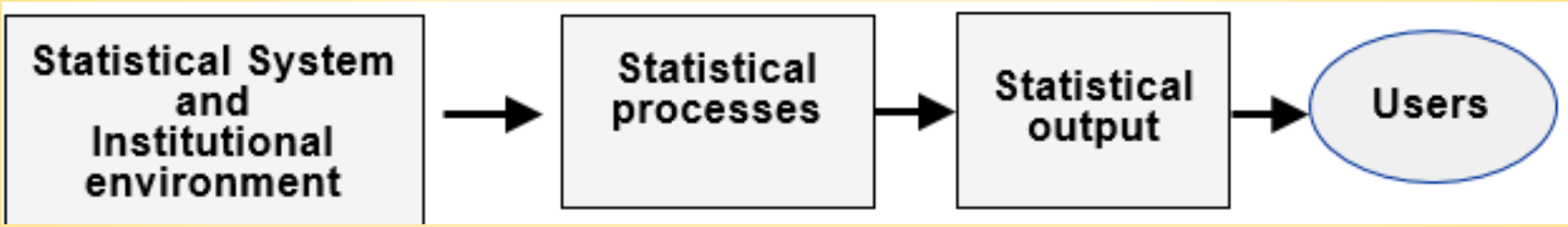
Assessment tools and risk management (Chapter 4)

- Statistical quality assessment is an important part of the overall quality management system of a statistical organization.
- It frequently focuses on the statistical products and the processes leading to their production but can also encompass the statistical system and institutional environment.



Assessment tools and risk management (Chapter 4)

- Methods and tools for statistical quality assessment comprise
  - quality indicators (both for products and processes)
  - quality reports
  - user surveys
  - self and external assessments
  - auditing (internal or external quality reviews), including peer reviews
  - labelling and certification.
- An efficient and cost-effective use of these methods requires that they are used in combination with each other. For example, quality reports can be the basis for audits and user feedback.

Assessment tools and risk management (Chapter 4)

Essential tools for quality assessment (basic level of quality assessment)

- **Quality indicators.** Quality indicators have to be identified (or developed) in order to measure the compliance with the respective quality principles and requirements. They are specific and measurable elements of statistical practice that can be used to characterize the quality of statistics.
  - They measure the quality of statistical products or processes from several aspects, and for example, can give an indication of both the output (e.g. timeliness) and process quality (e.g. response rates which can be used as a proxy for accuracy).
  - Quality indicators allow to describe and compare the quality between different statistics and over time.
  - Quality indicators are important for process management and continuous improvement and are reflected in UN NQAF requirement 8.6.

Assessment tools and risk management (Chapter 4)

Essential tools for quality assessment (basic level of quality assessment)

- **Quality reports**. Explain and review the main characteristics of the process and its products. While a main target group of a quality report is the users of the statistics, quality reports are also an important monitoring tool for statistics producers and managers.
- **User surveys.** The statistical agency should regularly consult its users about their needs and perception of quality.

Chapter 4. Assessment tools and risk management

Tools for quality assessment on the next level

- Based on the information collected by the statistical agency using the tools mentioned above, the quality of the processes and products can be evaluated and eventually labelled.
- Evaluation can be done in the form of self-assessments, other assessments, audits or peer reviews The objective is always the identification of improvement opportunities such as in processes and products. Therefore, these approaches constitute an important element of the Plan-Do-Check-Act cycle (PDCA).

Chapter 4. Assessment tools and risk management

- **Self-assessments** are comprehensive, systematic and regular reviews of an organization's activities carried out by the organization (i.e. those responsible for the relevant activities) itself. The results are referenced against a model or framework. Compliance with the Fundamental Principles of Official Statistics (FPOS) has been assessed by self-assessments several times.
- **Other internal or external assessments:** Can also be conducted by an internal group not responsible for the assessed statistics or by an external party. The International Monetary Fund (IMF), using its Data Quality Assessment Framework (DQAF), has undertaken assessments under the Reports on the Observance of Standards and Codes (ROSCs) Data Module.
- **Audit**: systematic, independent and documented process for obtaining evidence and determining the extent to which quality requirements are met.
- **Peer reviews**: external audit carried out by others working in the same field.

Chapter 4. Assessment tools and risk management

Labelling and certification

- **The results of the assessment can be compared to defined standards and requirements. This is often referred to as the labelling or certification layer and helps to enhance trust and credibility in official statistics.**

- **Labelling** of statistics conveys a message about the extent to which a set of quality standards are met. It can be attached to statistics or a producer of statistics. The attachment of a label needs a procedure to guarantee that the message is appropriate and true.

- **Certification** is an activity which assesses whether a product, service, process or system (e.g. a quality management system) complies with requirements defined by an internationally recognized standard, or other formal criteria.

Chapter 4. Assessment tools and risk management

❑Certification...

- ❑ The result of a successful certification is that the certification body, such as the International Organization for Standardization (ISO) awards a certificate to the organization.
- ❑ They supplement but are not alternatives to frameworks such as UN NQAF which are specifically developed for statistical agencies.
- ❑ Certification to ISO Standards is an advanced method and tool of process quality management. It requires documentation, quality reports, quality indicators, self-assessment and audit. There are significant benefits, but also costs associated with certification.

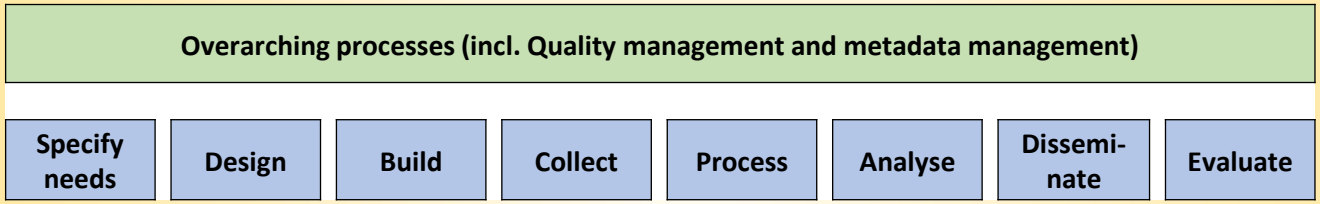
Certification of statistical agencies and statistical outputs

- ❑ The NSOs may be called upon to assess and certify the quality of statistical agencies and statistical outputs of other members of the NSS (possibly to label their statistics as official) or even of statistics produced outside the NSS.
- ❑ In such cases, the NSO may develop and deploy a checklist for the assessment of statistical outputs in consultation with the concerned stakeholders.
- ❑ Such a checklist based on UN NQAF can be used as a self-assessment tool by all producers of statistics.

Chapter 4. Assessment tools and risk management

Quality management using GSBPM

- The improvement in quality of statistical products requires the improvement of statistical processes. The Generic Statistical Business Process Model (GSBPM) describes and defines the set of business processes needed to produce official statistics, and hereby provides a framework for process quality documentation, assessment and improvement.



Metadata management

- The use and good management of metadata is essential for quality and the efficient operation of statistical processes. Metadata management can be facilitated and guided by the use of standard models such as GSBPM and Generic Statistical Information Model (GSIM).
- Requirements for metadata are important in UN NQAF and reflected in requirement 12.5 and 17.1 and in principle 19 on managing metadata

Chapter 4. Assessment tools and risk management

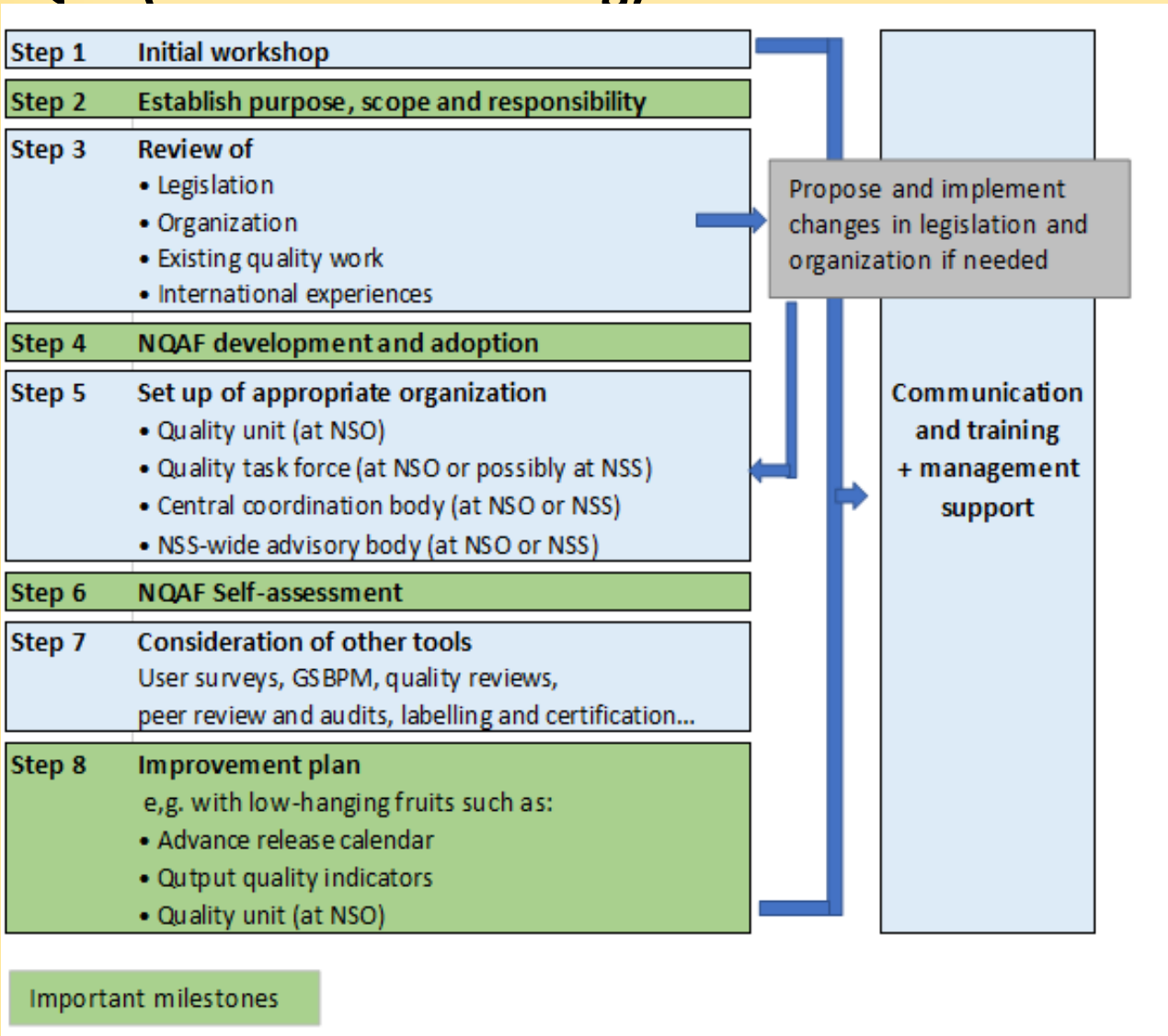
Risk management and the production of statistics

- Traditionally, risk management has been applied within financial management, security and safety.
- The level of risk linked to a source is defined as the product of the likelihood or probability of the event and its consequence or effect on the objective. Objectives can be defined as compliance as compliance with each quality principle, such as assuring statistical confidentiality (Principle 7) or assuring accuracy (Principle 15).
- The risk of errors in some statistics can be linked to risk sources such as the quality of source data, the methodology (e.g. sampling), the production system and the working processes linked to data collection, processing, analysis and dissemination.
- Risk analyses are particularly relevant for statistics where errors can have great impact such as for example the consumer price index, statistics on foreign trade and populations statistics.
- Risk and quality management frameworks are complementary and should not operate independently of each other.

The Roadmap for NQAF implementation

released for review and testing in August 2022 at https://unstats.un.org/unsd/methodology/dataquality/roadmap/

A Roadmap for the Development and implementation of NQAF (released for testing)



See also Chapter 5 and 6 of the Manual

https://unstats.un.org/unsd/methodology/dataquality/roadmap/

Step 1: Initial workshop

- *Conduct an initial workshop, typically by the NSO or the agency responsible for the coordination of the NSS; the workshop is usually conducted by an initial quality team as determined or established by management.*
- **Introduce NQAF to senior and middle management** at NSO and other statistical agencies (as applicable) and the staff directly responsible for supporting the work on quality.
- **Cover the basics**: quality concept, quality management, quality management in statistics and quality management frameworks for official statistics, UN NQAF, the Manual and tools.

- Note: **High-level commitment** and **basic staff resources** in terms of time commitment are absolute prerequisites for the introduction of an NQAF.

Step 2: Clarify and establish purpose, scope and responsibility for developing NQAF

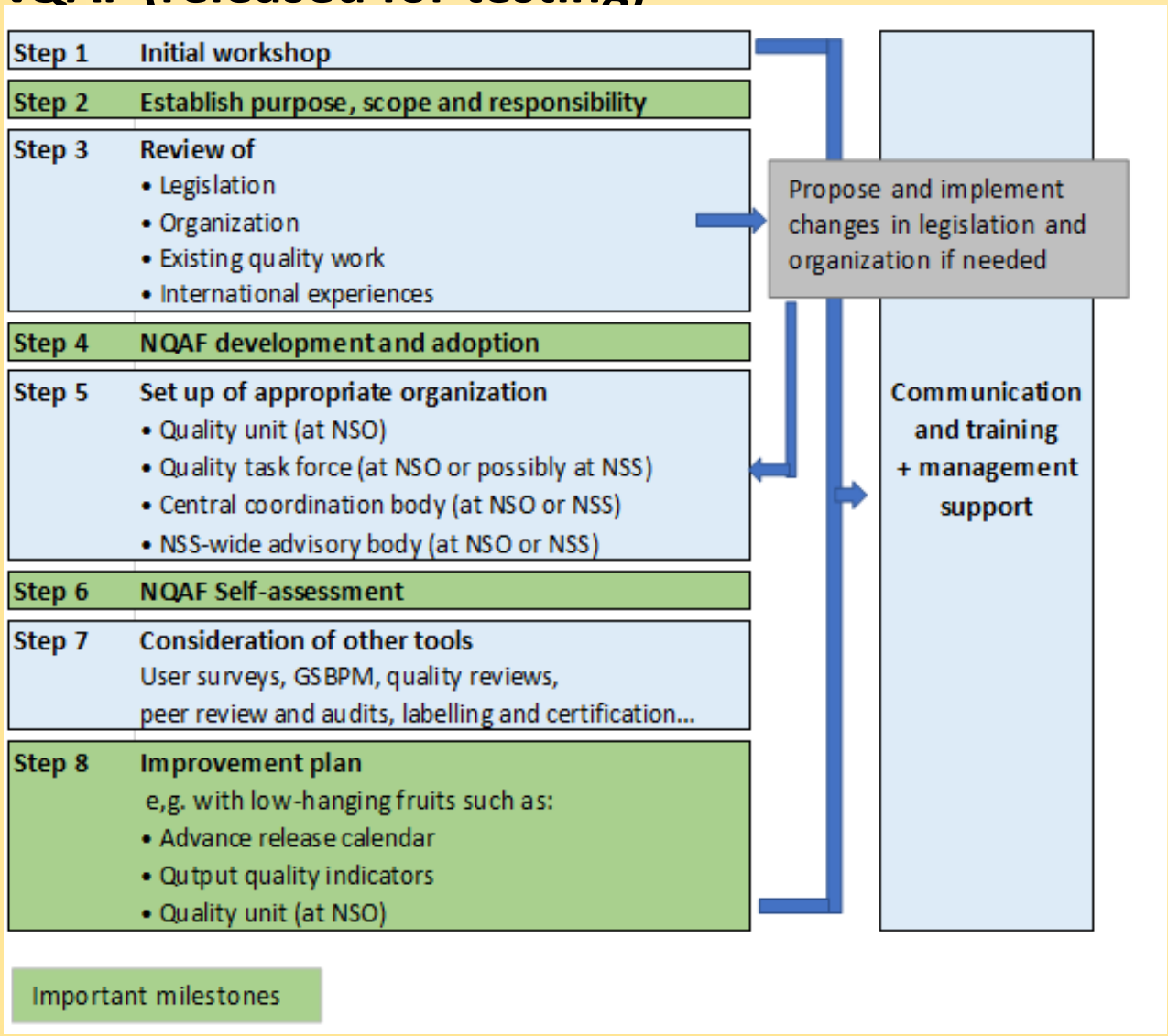
- *Typically, step 2 takes place at the NSO or the agency responsible for the coordination of the NSS; it is normally conducted by the quality unit (or quality team) at the NSO.*
- **Establish the purpose**. Usually, the purpose of the NQAF is to "Achieve quality improvements to better meet user needs and assure the trust in official statistics."
- **Establish scope and responsibility**:
- Option 1: The NSO implements NQAF only at the NSO
- Option 2: The NSO and/or NSS governance body implement NQAF at the NSO and other producers of official statistics
- Option 3: The NSO and/or NSS governance body implement NQAF at the NSO, at other producers of official statistics and at other statistics producers that are normally not members of the NSS.
- Note: NQAF should be implemented throughout the NSS, where applicable, but typically start with the NSO, which is normally at the centre of the NSS and serves as its coordinator and as a main producer of statistics.

Step 3. Review of legislation, organization, existing quality work and international experience

- *The **quality unit** (or quality team) at the NSO or the agency responsible for the coordination of the NSS, possibly supported by specific experts and other members of the national statistical system, will review the following, depending on national circumstances and as appropriate and needed:*
- **1. Legal basis of official statistics**
- **2. Organization of the NSO and NSS, and beyond**
- **3. Existing quality work including the use of quality frameworks**
- **4. International and regional experiences and practices**

Excursion: Possible amendments of statistical legislation and organization

A Roadmap for the Development and implementation of NQAF (released for testing)



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Step 4. NQAF development and adoption

- *The quality unit (or quality team) at the NSO or the agency responsible for the coordination of the NSS, supported by other members of the national statistical system, will need to undertake the following actions, depending on national circumstances and as appropriate:*
- **Seek high-level commitment and establish good communication** about the work and plans both within the NSO and NSS if applicable, to ensure support by all employees.
- **Analyse and document the instruments, tools, and practices** for statistical quality management that are currently being used.
- **Adapt NQAF** to national legislation, organization, existing quality work, and other national conditions and intended scope of usage.
- ***Establish a timeframe for the development and implementation of NQAF***. Starting from scratch, development or establishment of an NQAF may be undertaken over a period of a minimum of one year, including review, revision, and approval.
- NSO, or if applicable, a higher coordination or governance body formally adopts the NQAF.

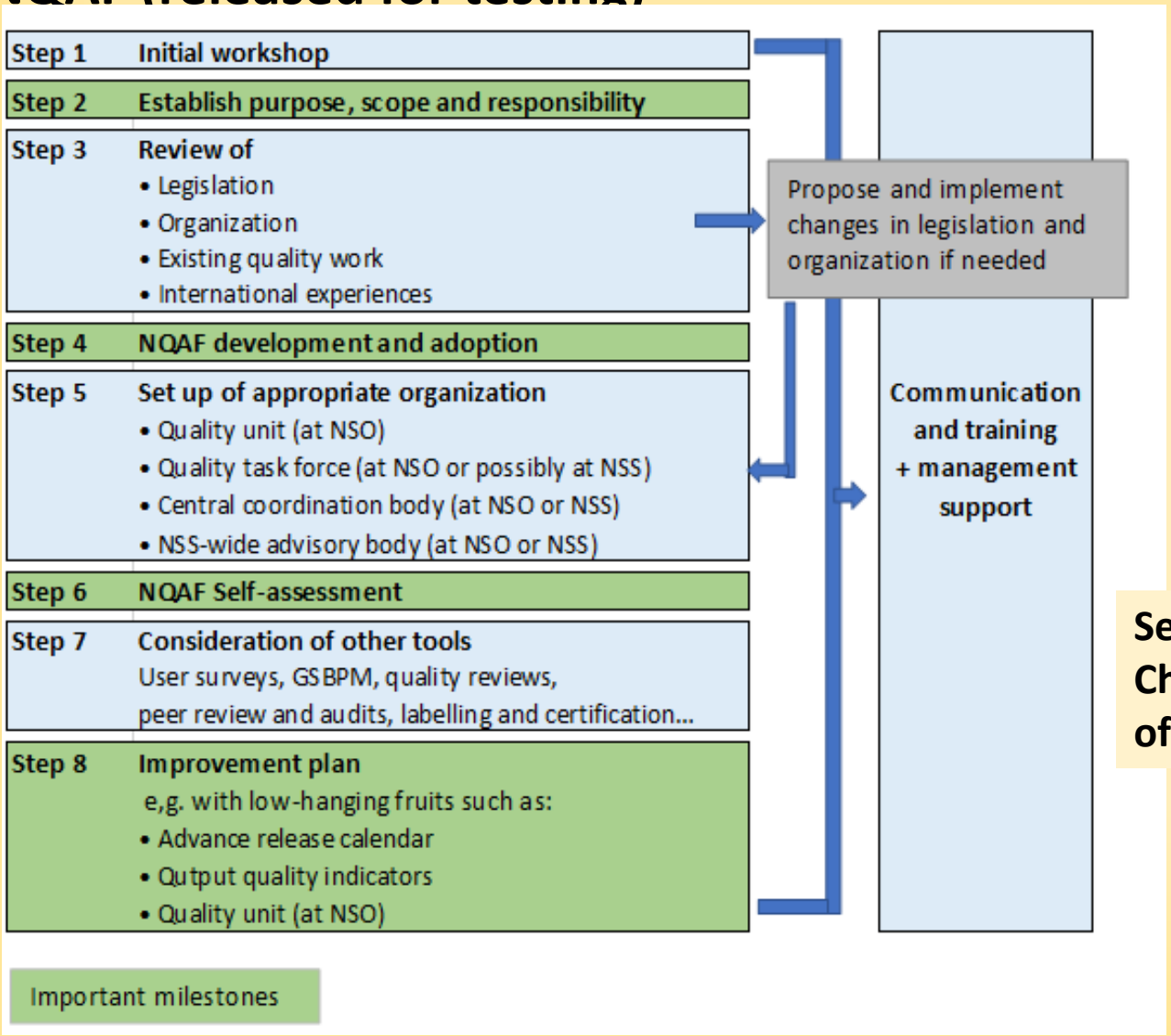
Step 4. NQAF development and adoption

- Note: Once adopted,
- 1. **the implementation of NQAF should be included, as appropriate, in the national strategies for the development of statistics, and in the annual workplans**.
- 2. **communication of and training** in quality assurance should also be a part of development and adoption in the relevant organizations. Training on quality frameworks and quality assurance in statistics should be mandatory for all new staff working in statistics production and dissemination.

Step 5. Set up of appropriate organization

- *The management at the NSO or at the agency responsible for the coordination of the NSS will need to undertake this step, typically supported by the quality unit at the NSO.*
- 1. **A quality unit at the NSO** is required to drive the implementation process.
- 2. **A task force with representatives of the statistics production units** and, if relevant other producers of official statistics, complements and supports the quality unit.
- 3. **NSS-wide bodies** such as a central coordination body, a governance body and an advisory body or user committee, depending on national circumstances, need to support NQAF implementation if the scope of implementation goes beyond the NSO. In some countries the NSO is the central coordination and governance body. (see Manual, Chapter 6.B for a much more detailed discussion of possible arrangements and the respective responsibilities of various bodies).

A Roadmap for the Development and implementation of NQAF (released for testing)



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Step 6. Self-assessment

- *Conduct a self-assessment based on the NQAF as major step and a natural starting point for the implementation of NQAF. The objective of an assessment is always the identification of improvement opportunities in (i) the management, coordination and institutional arrangements (ii) processes and (iii) products.*
- Note: The self-assessment should be done by a group of staff from different levels of management and should involve subject matter experts from across the statistical agency with adequate experience and training.
- 1. The self-assessment could be combined with or discussed in a workshop with participants from both management and with subject matter experts.
- 2. The self-assessment will result in an **overview of strengths and weaknesses**, as a basis for improvements and further work. The self-assessment may be repeated after some years.
- 3. The **risk of self-assessments** is to be overly subjective and positive and dis-attached from the actual situation. Appropriate composition of the assessment team, appropriate documentation and independent verification of the evidence can help to address the risk of subjectivity.

Self-assessment checklist

19 Principles

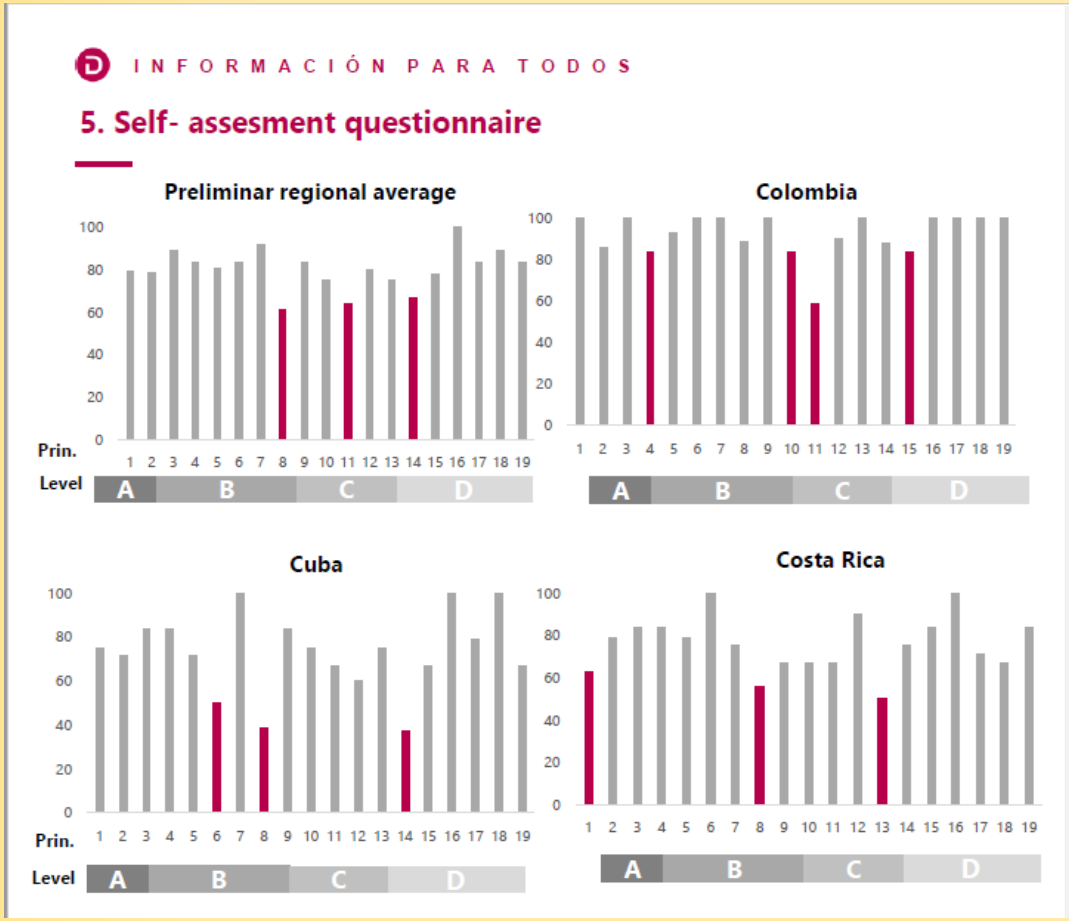
87 Requirements

356 Elements to be assured (good practices)

- Self-assessment checklist based on the UN Quality Assurance Framework contained in the Manual.
- For conducting regular and rigorous quality assessments with the objective to identify improvement actions.
- Also be used to provide an initial assessment for learning purposes or to introduce staff to quality assurance.
- Can be used to draft quality assurance framework.

https://unstats.un.org/unsd/methodology/dataquality/tools/

Example of self-assessments in a region



Level	Principle
A) Statistical system management	1. NSS Coordination
	2. Relationship management
	3. Standards management
B) Institutional environment management	4. Professional independence
	5. Objectivity
	6. Transparency
	7. Confidentiality
	8. Commitment to quality
	9. Adequacy of resources
C) Statistical process management	10. Methodological solidity
	11. Cost-effectiveness
	12. Appropriate procedures
	13. Respondent burden management
D) Statistical results management	14. Relevance
	15. Accuracy and reliability
	16. Timeliness and punctuality
	17. Accessibility and clarity
	18. Consistency and comparability
	19. Metadata management

Source: Juan Daniel Ortego, DANE, UN Statistical Commission 2021

Self-assessments

- Purpose may vary, from learning to identifying improvement actions. Scope may vary (only the national statistical office, a specific domain, data sources or statistics) as self-assessment can be done at different levels by those responsible for the work.

- Note: There are already some well-established peer review mechanisms in which many countries are participating. Examples are the OECD assessments, the global assessments of UNECE and Eurostat, the IMF Reports on the Observance of Standards and Codes (ROSCs) and the European peer reviews.

Step 7. Use of other tools (aside self-assessment)

The tools can be used at different levels, such as

- for individual statistics, in individual statistical domains, at individual statistical units, the entire NSO or the entire NSS with all its statistical products.
- Typically, the management at the respective level decides on the use of the different tools, unless it is decided at higher level or externally.

1. Use the essential tools for quality assessment such as **quality indicators**, **quality reports** and **user surveys** which constitute the basic level of quality assessment.
2. Use more advanced assessment tools such as
   - Internal audit or quality review (done by someone independent within your organization)
   - External peer review (done by a peer or a team of peers that are independent and from outside of your organization)
   - External audit (done by someone independent and outside of your organization, but not a peer)

Step 7. Use of other tools (aside self-assessment)

3. Introduce the Generic Statistical Business Process Model (GSBPM).
   - ❑ The improvement in the quality of statistical products requires the improvement of statistical processes.
   - ❑ The GSBPM describes and defines the set of business processes needed to produce official statistics, and thereby provides a framework for process quality documentation, assessment and improvement. (WARNING: This may be very resource intensive)

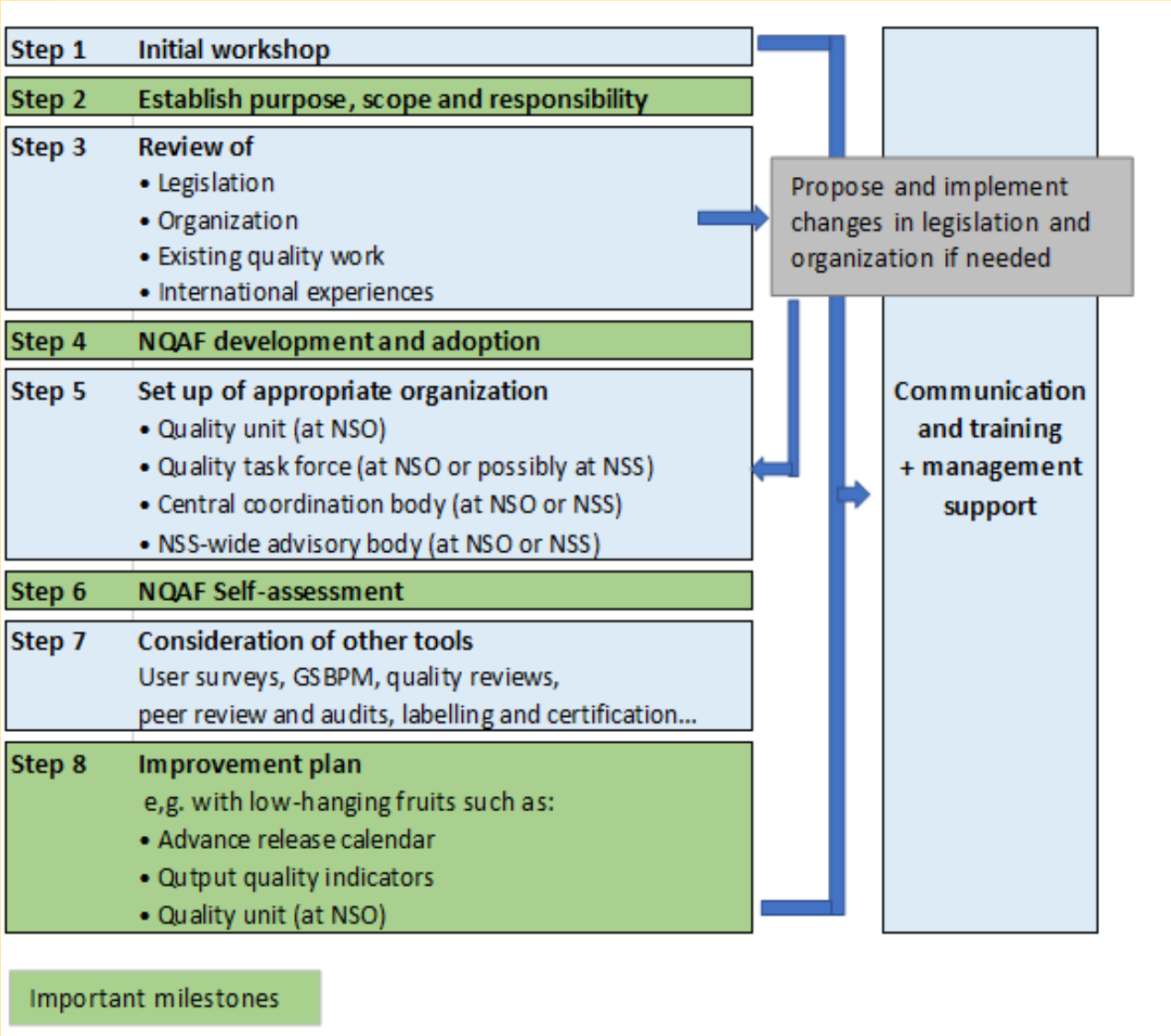
→ **See Manual, Chapter 4 Assessment tools and risk management**

Step 7. Use of other tools (aside self-assessment)

Note on the use of tools:

1. **1. Sequence of application**:
   - Some of the possible measures are sequential, some can be carried out in parallel.
   - Internal reviews of selected statistics carried out by a team with participants who are not responsible for working with these statistics may be a natural first step.
   - User surveys, GSBPM, the use of quality indicators and quality reports for users can be implemented or utilized in parallel.
2. **2. If not already used, the GSBPM should be introduced at the NSO together with the NQAF**
3. **3. Audits**
   - Are typically carried out by a third-party and may result in a certification, such as an ISO certificate to the relevant organization.
   - The ISO-standards are general and apply to any organization. Therefore, it does not necessarily assure the quality aspects specific for official statistics. The certification process required is quite time-consuming and costly.
   - However, a key word is documentation, which is just as important for statistical organizations as for any other.

A Roadmap for the Development and implementation of NQAF (released for testing)



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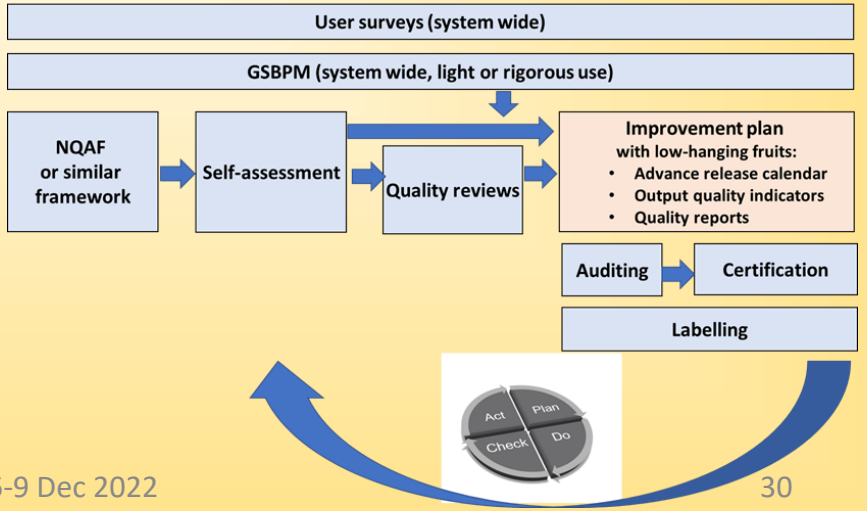
Step 8. Improvement plan – overview of the process

1. Develop an improvement plan based on self-assessments, possible reviews and audits.

2. Catch low-hanging fruits: Experiences show that there are some low-hanging fruits with quick/visible pay-off. These show ongoing commitment and can be relatively easily implemented not only at the NSO but other producers of official statistics. These are:

1. Establish an advance release calendar
2. Establish and publish some output quality indicators
3. Provide metadata and quality reports for users.

3. Follow-up: Improvement plans should be regularly followed up and monitored, and regularly revised, in line with the PDCA-cycle (Plan-Do-Check-Act). Figure 2 shows how quality assurance should follow the PDCA-cycle, by following up on the improvement plans and possibly repeat the self-assessment and reviews.



Important considerations

- Objective and approach:
  - The objective of quality assurance is to achieve quality improvements in order to meet user needs.
  - Quality assessments aim to identify weaknesses and opportunities for improvement at the level of the statistical system, including management, coordination and institutional arrangements, processes and statistical outputs. Assessments constitute an important element of the “Plan-Do-Check-Act” cycle made popular by W. Edwards Deming, guiding all changes for continuous improvement.
- Resources:
  - The process of establishing and implementing the NQAF and other tools for quality management will typically be driven by a **quality unit with at least 2 – 3 employees** and support from management on all levels. The quality unit may be organized within or together with a larger methodology unit.
  - **The coordination role for the NSS and statistical agencies outside the NSO will require at least 1 – 2 extra employees**. A quality task force can support the work of the quality unit.

Important considerations

- Iterative approach:
  - Quality management is a continuous effort, and the use of an NQAF is a long-term task.
  - **The Establishment of an NQAF may be undertaken over a period of a minimum of one year.**
  - **Once adopted, NQAF and other tools might typically be used for a period of 1 – 2 years before revisions are being considered**, unless a specific need arises.
- Process:
  - Development should not be too fast and comprise too many simultaneous efforts.
  - A step-by-step strategy should be followed concentrating on the main steps and not necessarily, following all the proposals and possibilities that are mentioned in the Manual.
- Risks: Obstacles or risks are linked to the possible lack of support and ownership of quality assurance. High level commitment is crucial as is communication and cooperation.

Important considerations

- Address the management and coordination of the statistical system:
  - Experiences show that coordination can be one of the greatest weaknesses of the NSS and of statistics in individual domains. Therefore, the NSS and the responsibilities within the NSS, including for coordination should be clearly defined.
  - This might require changes to the statistical legislation which can take one or more years. Coordination and collaboration between all producers, possibly also other stakeholders such as data providers is frequently key to achieving quality improvements, such as in the case of the use of administrative data for statistics production.
- Make communication and training central parts of the implementation of quality assurance and create a culture of quality. Communication and training and also management support are linked to all steps of the development and implementation of NQAF (see Figure 1). A NQAF provides a basis for creating and maintaining a culture of quality within the NSS.


statistics
data
quality
national
assurance
use
system
process
principle
requirement
indicator
official
user
implement
standard
agency
production
develop
source
NSS
NQAF
international
SDGs
framework
coordinate
methodology
metadata
dissemination
management
institutional
country
producer
member
include
assess
administrative
survey
organization
available
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GSBPM
commitment
appropriate
recommendation
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