United Nations | DESA Statistics Division

The Thematic Conference for Pacific SIDS - Managing a Statistical Organization in Times of Change

Session 1: **National Quality Assurance Framework for Novel Data Sources**

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What is quality in Statistics (Definition)

Quality is the degree to which a set of inherent characteristics of an object fulfils requirements (see International Standards Organization, ISO 9000:2015).

In the context of statistical organizations, the object is the statistical output or product, the process, the institutional environment or the whole statistical system

A simple definition of quality is "fit for use" or "fit for purpose".

What is quality in Statistics (Definition)

Notes:

- It is the users' needs that define the quality.
- It is multi-dimensional. The dimensions of quality are interrelated and, there are trade-offs between some of them.
- Quality is crucial for the confidence in a statistical institution and its products.
- Quality is the responsibility of all!

Quality management systems for official statistics

1. Are all based on quality assurance frameworks
2. Are all based on the UN Fundamental Principles of Official Statistics (FPOS)
3. What is specific about official statistics?
    1. Professional independence; impartiality; protection of privacy; access to all types of data requires high trust;
    2. This is reflected in laws, quality frameworks and ethical standards that go beyond the generic quality management systems

Quality management systems for official statistics

Definition: A National Quality Assurance Framework (NQAF) is a coherent and holistic system for statistical quality management.

1. It is a tool for all working in official statistics:
2. Its objective is to achieve quality improvements at the level of the statistical system, including management, coordination and institutional arrangements, processes and statistical outputs in order to meet user needs.
3. It sets a standard of quality and hereby assures trust in official statistics.

International quality frameworks for statistics

- UN Fundamental Principles of Statistics (1994, 2014)
- **UN National Quality Assurance Framework (NQAF 2013, 2019)**
- European Statistics Code of Practice (2005, 2011, 2017)
- African Charter on Statistics (2009)
- Code of good practice in statistics for Latin America and the Caribbean (2011, 2023)
- ASEAN Community Statistical System (ASS) Code of Practice (2012)
- OECD Good Statistical Practice (2015)

Basic principles are common

What is the United Nations National Quality Assurance Framework (UN NQAF)?

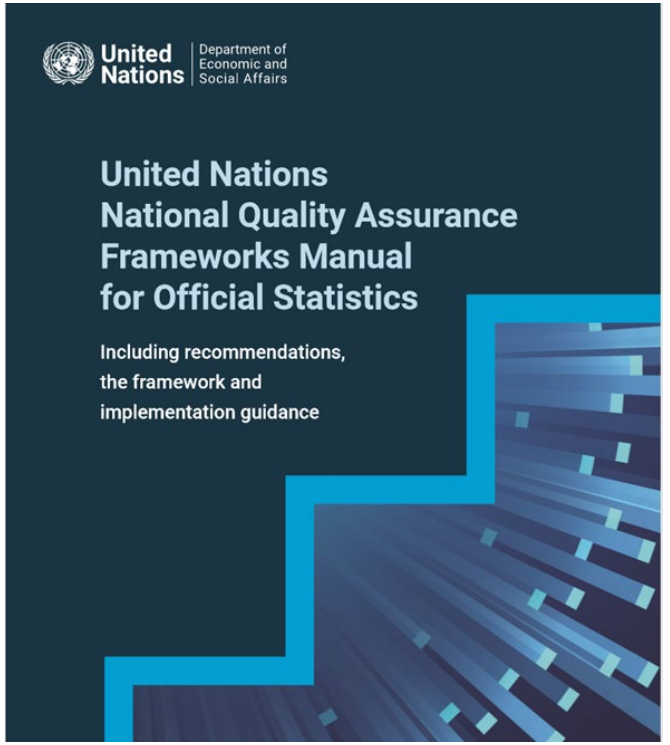
1. UN NQAF is the generic United Nations (UN) national quality assurance framework which is contained in Chapter 3 and the Annex of the UN National Quality Assurance Frameworks Manual for Official Statistics (Manual) (available at: https://unstats.un.org/unsd/methodology/dataquality/un-nqaf-manual/).

2. The UN NQAF consists of principles, requirements and elements to be assured.

3. The UN NQAF does not aim to replace any of the existing statistical quality assurance frameworks and guidelines for official statistics. Countries and individual producers of official statistics that are already fully engaged in quality assurance and are following one of the existing quality frameworks may view the UN NQAF and the Manual only as an additional reference point that supports what they are already doing, and as a source of information on the application of quality assurance in different situations.

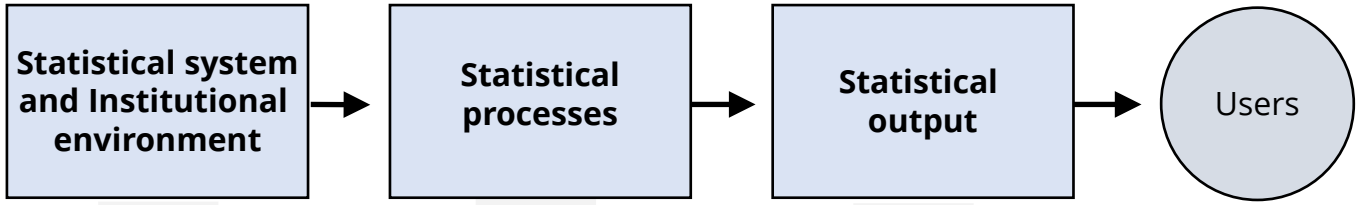
UN NQAF is part of the “Manual”

Part	Chapter	Title
Introduction	Chapter 1	Contents and use of this Manual
Recommendations	Chapter 2	Recommendations on quality assuarance for official statistics
UN NQAF	Chapter 3	The UN National Quality Assurance Framework: principles and requirements
Implementation	Chapter 4	Assessment tools and risk management
	Chapter 5	Development and implementation of a national quality assurance framework
	Chapter 6	Implementation of quality assurance within the national statistical system
	Chapter 7	Quality assuarance for statistics compiled from different data sources
	Chapter 8	Quality assuarance for SDG indicator data and statistics
References	Chapter 9	Quality assurance in the global statistical system
UN NQAF Annex	Annex A	Detailed Checklist of elements to be assured



Available at: https://unstats.un.org/unsd/methodology/dataquality/un-nqaf-manual/

UN NQAF structure – logic



1. Coordinating the national statistical system
2. Managing relationships with data users, data providers and other stakeholders
3. Managing statistical standards
4. Assuring professional independence
5. Assuring impartiality and objectivity
6. Assuring transparency
7. Assuring statistical confidentiality and data security
8. Assuring the quality commitment
9. Assuring adequacy of resources

10. Assuring methodological soundness
11. Assuring cost effectiveness
12. Assuring appropriate statistical procedures
13. Managing the response burden

14. Assuring relevance
15. Assuring accuracy and reliability
16. Assuring timeliness and punctuality
17. Assuring accessibility and Clarity
18. Assuring coherence and comparability
19. Managing metadata

There are 19 principles, 87 requirements and 356 elements to be assured (good practices)

UN NQAF structure – hierarchy of principles, requirements and elements to be assured

19 Principles (commitments that guide us in achieving our quality objectives)

A principle is implemented by complying with its requirements

87 Requirements (something that is needed to ensure implementation)

In general, compliance with a requirement depends on the compliance with the elements to be assured under this requirement

357 Elements to be assured

Possible activities, methods and tools to meet the requirement, reflecting a good practice. To be followed or assured as long as they are applicable.

Module for Quality Assurance when using Administrative and Other Data Sources (Draft)

- **Part 1**: Conceptual approach to assure quality when using administrative and other data sources
- **Part 2**: Checklist of ten critical requirements
- **Annex 1**: Sub-module for input data validation
- **Annex 2**: Glossary of working definition of relevant terms

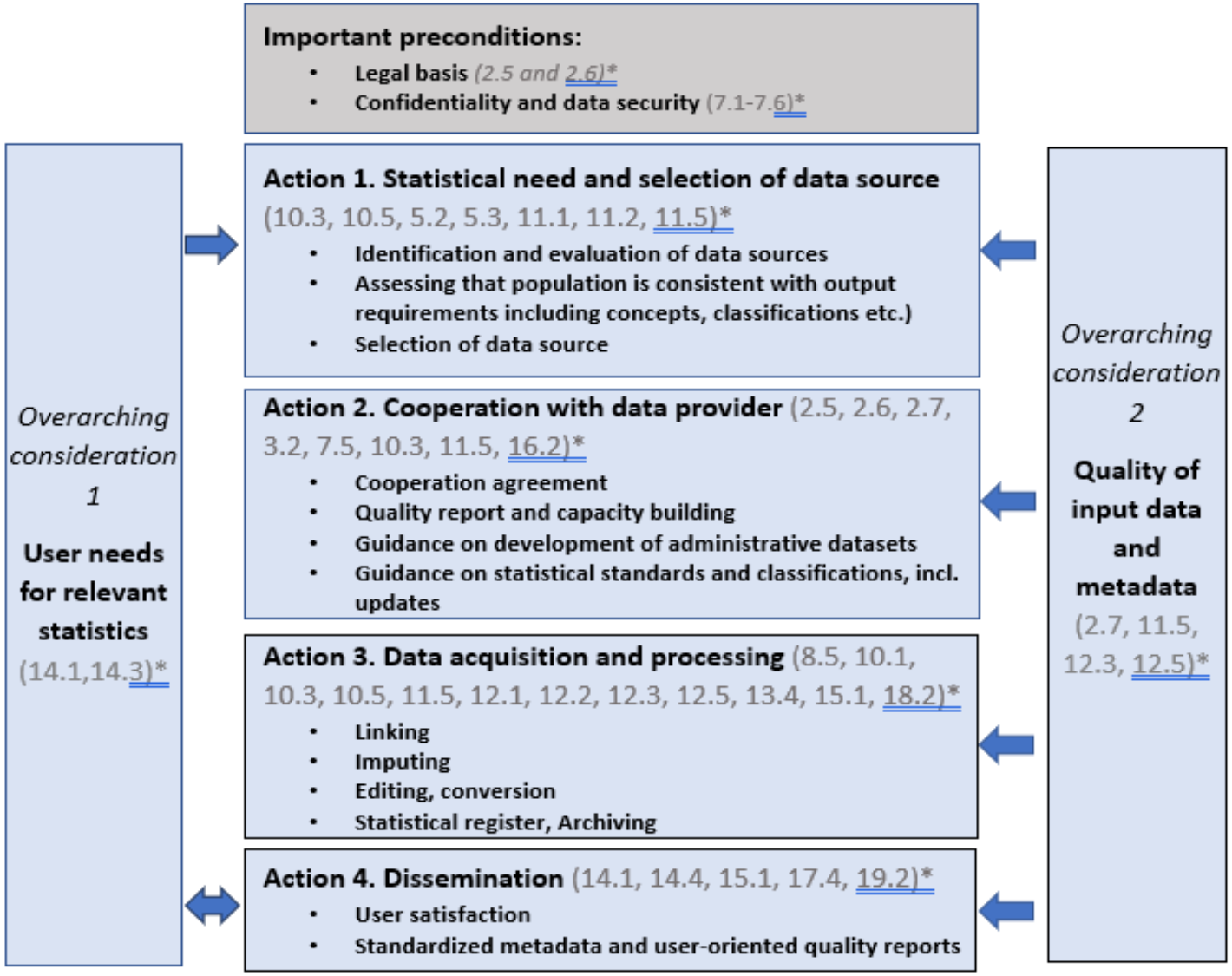
Available at: https://unstats.un.org/unsd/methodology/dataquality/nqaf_gc_2024/

Part 1: Conceptual approach identifying relevant actions and aspects to be considered:

- The **four actions** can be understood as activities or steps that typically need to take place when using administrative and other data sources.

- The **four actions** can follow each other or can be undertaken individually, depending on the specific circumstances.

- The **two overarching considerations** reflect aspects that must be considered during the four actions and concern user needs, the quality of input data, and metadata.



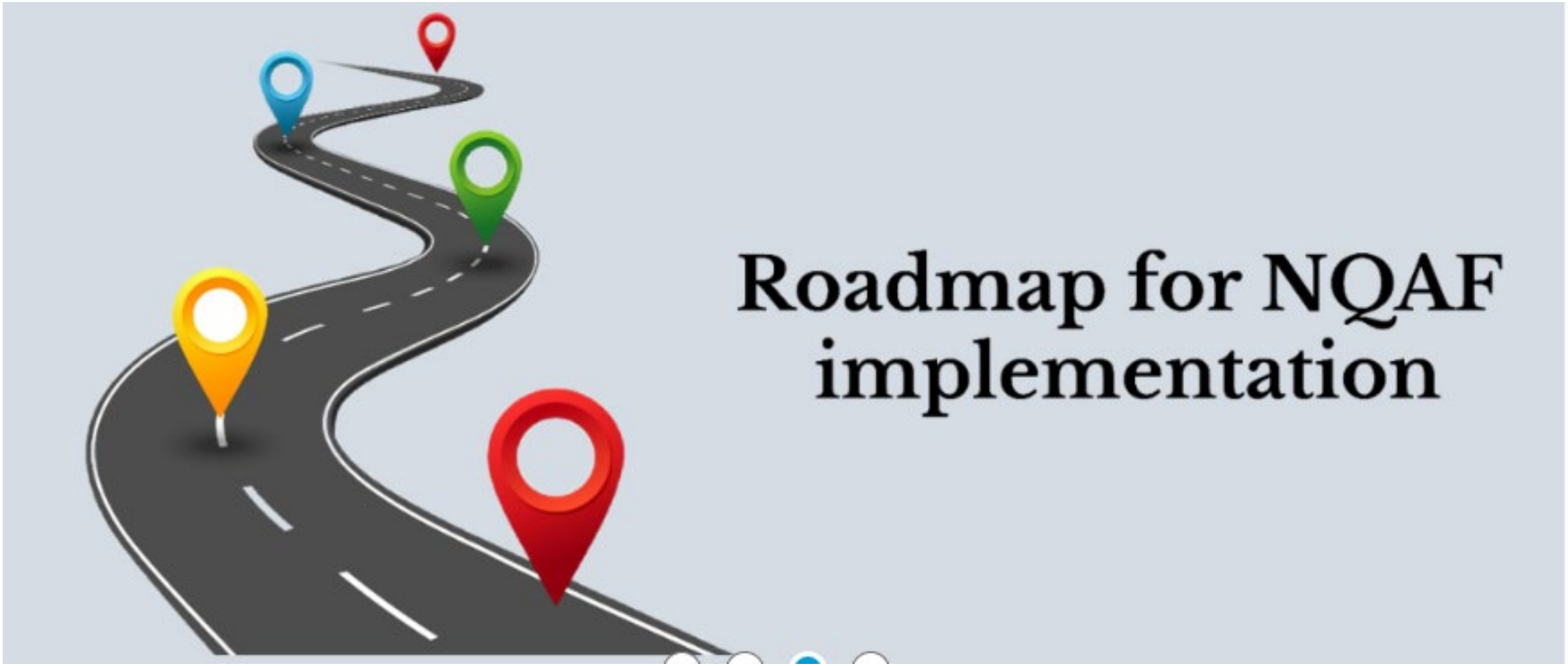
* The numbers in brackets indicate the link to relevant UN NQAF requirements or principles. The relevant UN requirements are listed in Annex 3.

Part 2: Ten critical requirement

1. **The use of administrative and other data sources must meet a set of preconditions and take user needs into consideration**. Suggested practices:
   a) There is legal access to the data.
   b) …
2. **New data sources, data providers as well as the use of multiple data sources are proactively explored.** Suggested practices:
3. **There is basic information about the data provider and general information about the data source.** Suggested practices:
4. **The data provider and data source are assessed for their risks**. Suggested practices:
5. **There are cooperation agreements with the data providers and there is ongoing cooperation, as applicable**. Suggested practices:

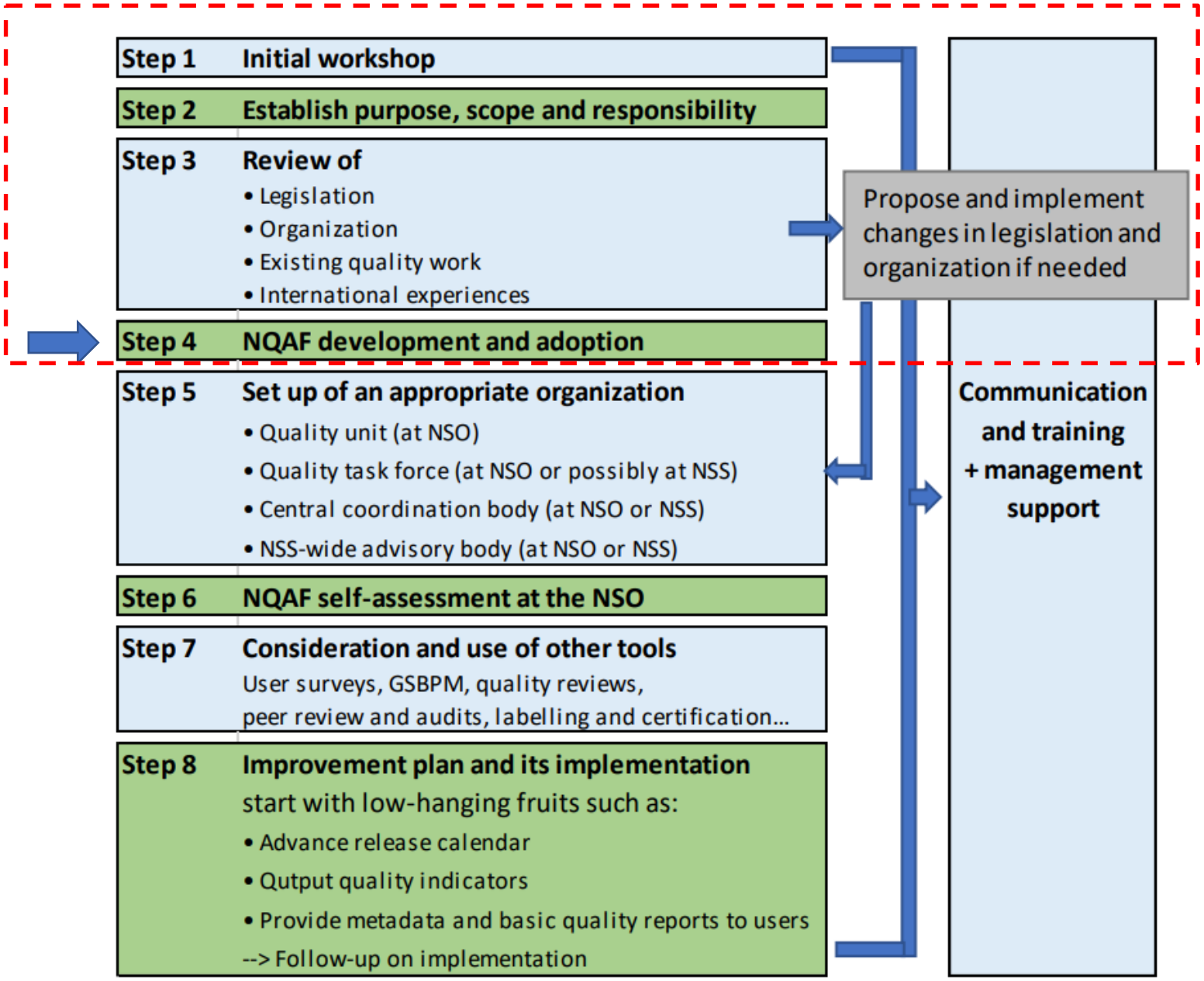
Part 2: Ten critical requirement

6. **The data provider assures the quality of its data and produces a quality report (or quality declaration) in cooperation with the statistical agency, as applicable.** Suggested practices:
7. **The quality of the input data is systematically evaluated by the statistical agency.** Suggested practices:
8. **There is comprehensive metadata about the input data**. Suggested practices:
9. **Processing of input data at the statistical agency follows standards, guidelines, and best practices**. Suggested practices:
10. **The dissemination of statistical outputs meets the needs of users**. Suggested practices:



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

A Roadmap for the Development and implementation of a National Quality Assurance Framework



See also Chapter 5 and 6 of the Manual

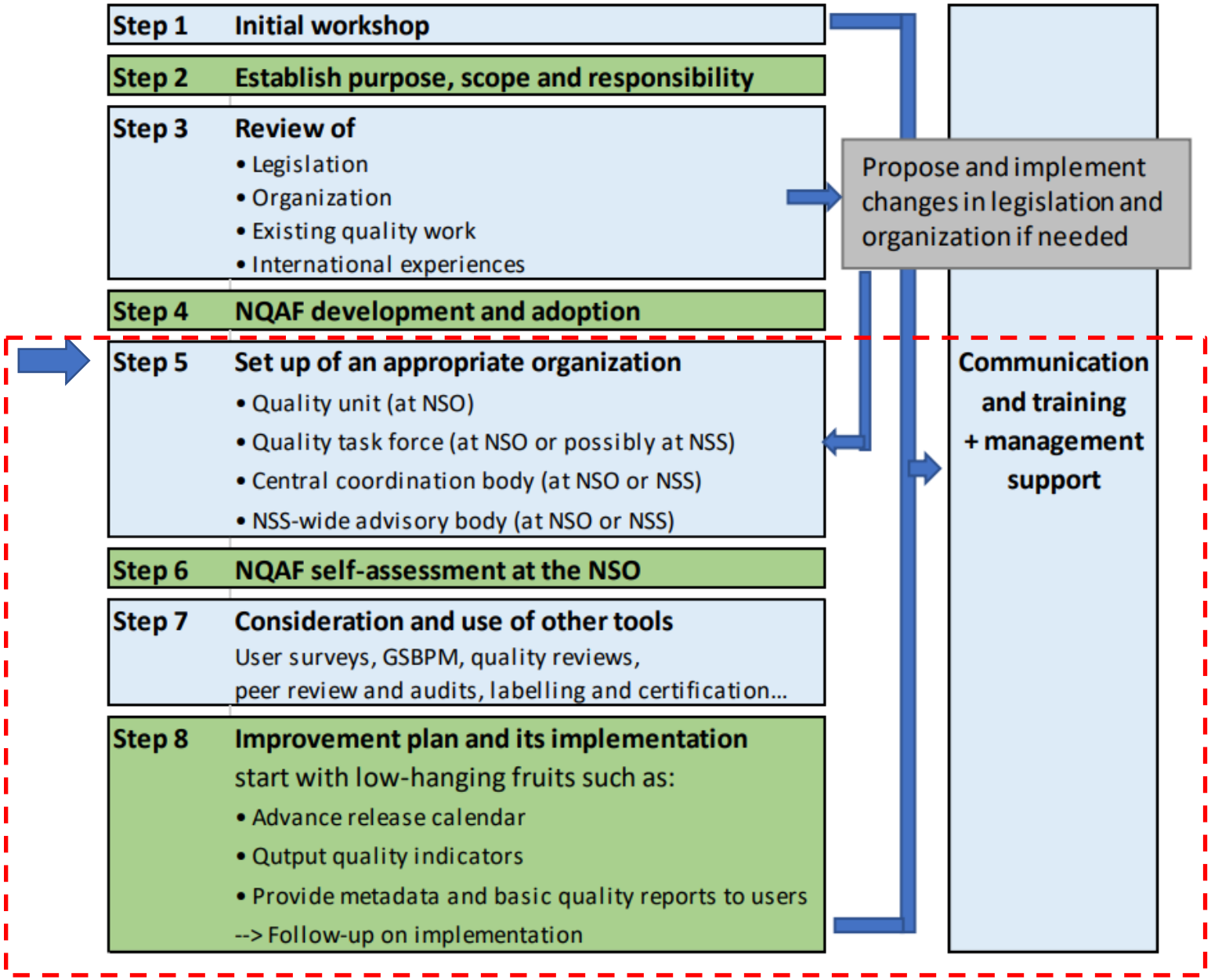
Step 1: Initial workshop

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.

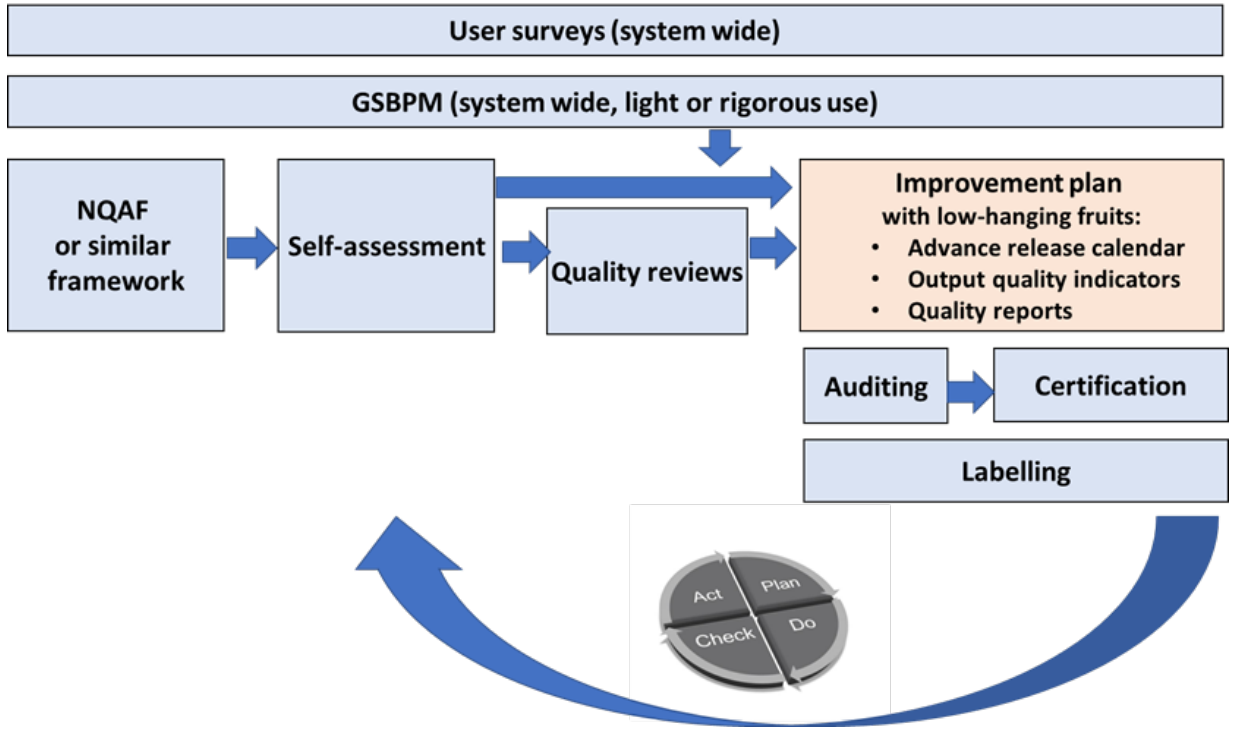
A Roadmap for the Development and implementation of a National Quality Assurance Framework



See also Chapter 5 and 6 of the Manual

Step 8. Improvement plan – overview of the process

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). The figure shows how quality assurance should follow the PDCA-cycle, by following up on the improvement plans and possibly repeat the self-assessment and reviews.



Self-assessment checklist

Available at: https://unstats.un.org/UNSDWebsite/data-quality/check-list

Self-assessment checklist based on the UN Quality Assurance Framework contained in the Manual

Purpose:

1. For conducting regular and rigorous quality assessment with the objective to identify improvement actions
2. Also be used to provide an initial assessment for learning purposes or to introduce staff to quality assurance
3. Can be used to draft quality assurance framework

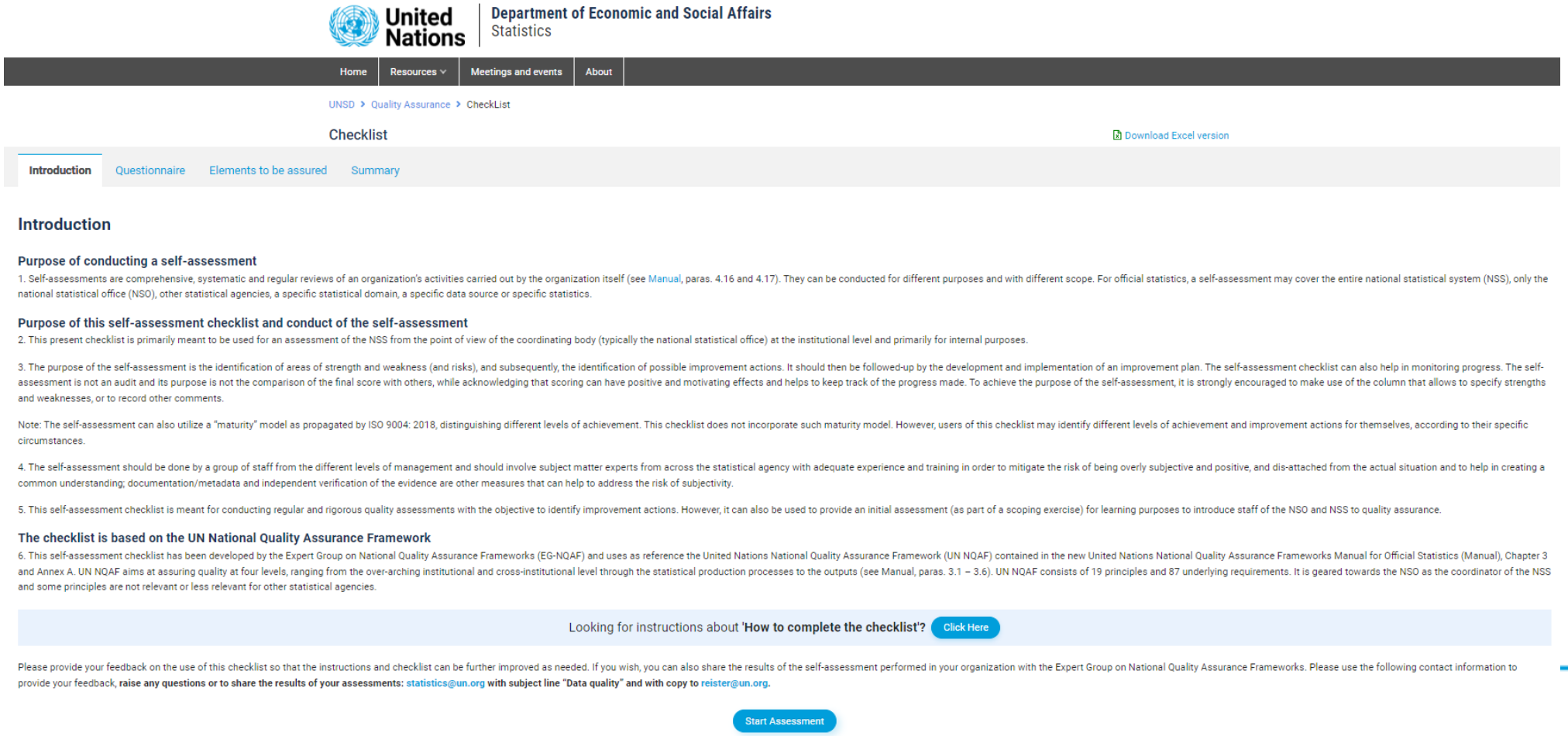
19 Principles

87 Requirements

356 Elements to be assured (good practices)

Self-assessment checklist: web-version

https://unstats.un.org/UNSDWebsite/data-quality/check-list



Self-assessment checklist instructions

- **Scoring:**
  - **Full compliance** **1**
  - **Partial compliance** **0,5**
  - **No compliance** **0**
  - **Not assessed** **Does not affect average score**

- **The purpose is improvements, hence specification of strengths, weaknesses and other comments are important**
- **Elements to be assured are mainly meant for references, to facilitate scoring**
- **But it is possible to score the detailed elements as help**
- **Objectivity is often a challenge in self-assessments. But several independent scorings may be done**
- **The total score for the 4 levels is calculated (equal weights)**
- **See: Self-assessment checklist has instructions**

NQAF scoring system

Assessment of compliance with the United Nations National Quality Assurance Framework (2019)

Instructions: Assess the degree of compliance for each of the requirement and describe strengths/weaknesses, include other comments.
For each of the requirements you can refer to the detailed list of elements to be assured (please, use the link next to the requirement).
All requirements are applicable. The only case where "not assesed" can be used, is if there is a not enough information. In this case a special note is displayed in the summary of the assessment saying that the assessment is not fully complete.

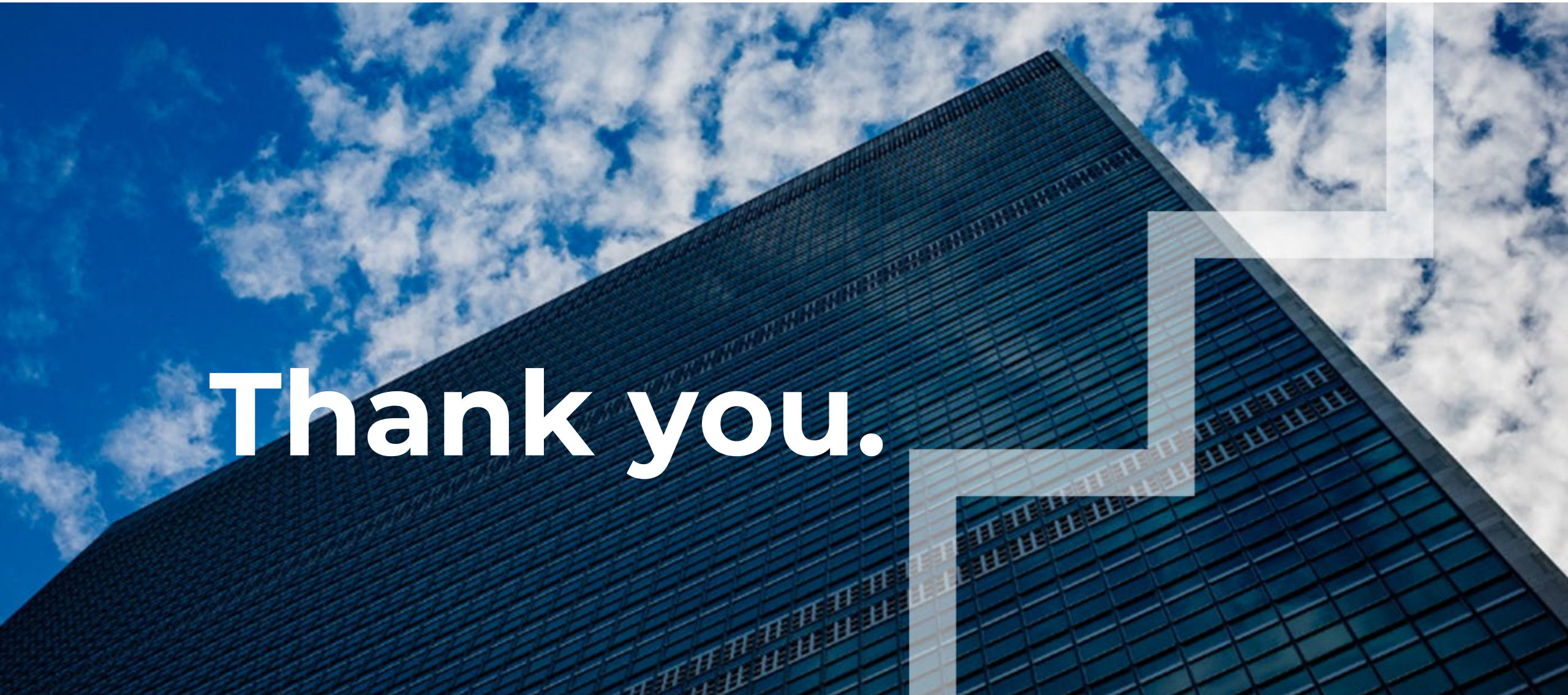
Degree of compliance:	
	Full compliance
	Partial compliance
	No compliance
	Not assessed

Level		Principle		Requirement		Elements to be assured	Assessment	
							Compliance	Specify strengths, weaknesses, other comments
A	Managing the statistical system	1	Coordinating the national statistical system	1,1	A statistical law establishes the responsibilities of the members of the national statistical system including its coordination. Its members are identified in a legal or formal provision.	click		
				1,2	There are a body and mechanisms for the coordination of the national statistical system for activities at the local, national, regional and international level.	click		
				1,3	There is a mechanism for considering statistics produced outside the national statistical system, and if appropriate, for these statistics to become official.	click		
				1,4	There is a national plan or program for the development and production of official statistics.	click		

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

Country self-assessment checklist results

Level		Principle		Score C1	Score C2	Score C3	Score C4	Score C5	Score C6	Score C7	Score C8	Score C9	Overall Average
A	Managing the statistical system	1	Coordinating the national statistical system	50	100	75	38	75	25	88	38	67	62
		2	Managing relationships with stakeholders	64	64	79	57	93	93	64	64	79	73
		3	Managing statistical standards	50	100	83	0	67	100	50	100	83	70
B	Managing the institutional environment	4	Assuring professional independence	100	83	83	33	100	100	83	50	83	80
		5	Assuring impartiality and objectivity	93	93	79	21	93	86	86	79	92	80
		6	Assuring transparency	100	100	100	0	100	100	75	50	100	81
		7	Assuring statistical confidentiality and data security	100	100	75	42	100	100	83	50	88	82
		8	Assuring the quality commitment	42	75	63	13	50	56	81	63	57	55
		9	Assuring adequacy of resources	67	67	67	33	83	67	83	50	75	66
C	Managing statistical processes	10	Assuring methodological soundness	100	70	70	30	80	100	70	80	80	76
		11	Assuring cost-effectiveness	58	50	58	25	58	67	75	42	50	54
		12	Assuring appropriate statistical procedures	80	80	90	60	70	80	80	80	60	76
		13	Managing the respondent burden	75	50	50	13	63	88	75	88	88	65
D	Managing statistical outputs	14	Assuring relevance	63	75	75	38	38	63	63	100	88	67
		15	Assuring accuracy and reliability	67	67	83	33	67	50	50	83	67	63
		16	Assuring timeliness and punctuality	88	75	100	50	38	100	75	100	75	78
		17	Assuring accessibility and clarity	71	79	71	36	79	86	79	86	86	75
		18	Assuring coherence and comparability	100	83	67	83	100	67	67	100	100	85
		19	Managing metadata	100	83	83	17	100	17	100	0	67	63
			OVERALL SCORE	77	79	76	33	76	76	75	68	78	71


Thank you.