International Workshop on the implementation of NQAF and GSBPM

China, 10-11 January 2022

Introduction to UN NQAF and its implementation

Main contents of UN NQAF and the Manual

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Agenda

Day 1 – 10 January 2022

09:00-09:20	**Opening ceremony**
09:20-11:00	**Introduction to UN NQAF and its implementation**
11:00-12:00	**Country case studies of statistical quality management**
14:00-15:50	**China Statistical Quality Assurance Framework**
15:50-16:50	**Introduction to GSBPM and its implementation**

Day 2 – 11 January 2022

09:00-11:20	**UN NQAF implementation**
11:20-12:00	**Country case studies of statistical quality management**
14:00-16:00	**Introduction to GSBPM and its implementation, including country case studies**
16:00-16:50	**Country case studies of the use of GSBPM**
16:50-17:00	**Closing ceremony**

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)

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

1. It is the users' needs that define the quality. Different users may have different needs that must be balanced against each other to give the quality concept a concrete content.

2. Over the past twenty years, statistical agencies have arrived at the consensus that the concept of quality of statistical information is multi-dimensional and that there is no one single measure of quality.

3. For a statistical product, the general definition of quality is operationalized by specifying a set of factors or dimensions that characterize its quality: Relevance, Accuracy and reliability, Timeliness and punctuality, Accessibility and clarity, Coherence and comparability.

4. The dimensions of quality are interrelated and, there are trade-offs between some of them. Adequate management of each of them is essential. At the same time, they must be seen in relation to each other within the statistical production processes.

Why is the quality of statistics important?

- The development of society and the economy depends on reliable information, quality statistics is a crucial part of this information
- Quality is crucial for the confidence in an statistical institution and its products
- Quality is the responsibility of all!

Quality Management

Coordinated activities to direct and control an organisation with regard to quality (ISO)

- Establishing quality policies and objectives
- Processes to achieve these objectives (planning, quality assurance, control and improvement)

Quality management system

- provides a coherent and holistic system as a basis for quality management
- A quality management system model or standard that can be applied to any type of organisation

Generic quality management systems

1. There are various general quality management frameworks applicable to any organization, such as Total Quality Management (TQM), International Organization for Standardization (ISO) , Six Sigma, European Foundation for Quality Management (EFQM), Balanced Scorecard, Lean and Lean Six Sigma. These frameworks are largely based on common definitions and principles, but their main focus and formalization vary.

2. For example, ISO emphasizes certification and standardization of "processes", while Six Sigma focuses on quality control of the "products/outputs" using statistical methods. Lean emphasizes improvement in efficiency by reducing waste.

3. In many ways, TQM, which was developed in the last century, is the foundation of all general quality frameworks. TQM is "a set of systematic activities carried out by the entire organization to effectively and efficiently achieve company objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price".

4. The strategic core of all major TQM models is continuous improvement, often illustrated with reference to the Plan-Do-Check-Act cycle (PDCA) made popular by Deming. This cycle is a four-step process which guides all changes for continuous improvement.

ISO 9000/9001: 2015: Quality management systems with requirements

- Customer focus
- Leadership
- Engagement of people
- Process approach
- Improvement
- Evidence-based decision making
- Relationship management

All principles are to some extent reflected in the principles and requirements in quality frameworks for statistics.

Quality and quality frameworks in statistics

What is specific about (official) statistics?

- Professional independence, impartiality, protection of privacy and access to all types of data requires high trust
- This is reflected in laws, quality frameworks and ethical standards that go beyond the generic quality management systems

Quality management systems for statistics are based on quality assurance frameworks:

- Definitions (of quality in general and in statistics)
- Principles and requirements
- Supported by methods and tools

Quality assurance frameworks designed for official statistics are all based on the UN Fundamental Principles of Official Statistics (FPOS)

Statistical Quality Management Frameworks

- The above-mentioned general quality systems inspired the statistical quality frameworks such as the
  - European Statistics Code of Practice (ES CoP),
  - the International Monetary Fund's Data Quality Assessment Framework (DQAF),
  - The Recommendation of the Organisation for Economic Co-operation and Development (OECD) on Good Statistical Practices and
  - United Nations National Quality Assurance Framework
- These are also inspired by and consistent with the FPOS which emphasizes independence, impartiality, and protection of data on individuals. Such requirements of official statistics were first formulated jointly in the FPOS in 1992.
- Note on terminology: Quality management includes quality assurance but both terms are often used synonymously; quality management is a more overarching concept while quality assurance implies a greater focus on concrete actions.

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)
- ASEAN Community Statistical System (ASS) Code of Practice (2012)
- OECD Good Statistical Practice (2015)

Basic principles are common

UN NQAF structure – logic

Statistical system and Institutional environment → **Statistical processes** → **Statistical output** → Users

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.

UN NQAF structure – hierarchy: Example

Principle 1: Coordinating the national statistical system

Coordination of the work of the members of the NSS is essential for improving and maintaining the quality of official statistics. Principle 1 is mainly supported by FPOS 8.

Requirement 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.

- The coordination role of the national statistical office (NSO) or other body is defined in a statistical law.
- The statistical law specifies the requirements for official statistics and the scope of the national statistical system (NSS).
- Members of the NSS are identified in a formal document.
- Responsibilities of NSS members for the development, production and dissemination of official statistics are clearly specified in the respective laws and regulations.

Please note:

The United Nations National Quality Assurance Framework (UN NQAF) of Chapter 3 is descriptive. However, FPOS and the associated recommendations of Chapter 2 support specific principles and give them an obligatory character.

UN NQAF – principles on 4 levels

Level A. Managing the statistical system

Coordination of the national statistical system and managing relations with all stakeholders is a precondition for the quality and efficient production of official statistics. Ensuring the use of common statistical standards throughout the system is an important part of this management.

- **Principle 1: Coordinating the national statistical system**
- **Principle 2: Managing relationships with data users, data providers and other stakeholders**
- **Principle 3: Managing statistical standards**

UN NQAF – principles on 4 levels

Level B. Managing the institutional environment

The institutional environment is one of the prerequisites to ensure the quality of statistics. Principles to be assured are professional independence, impartiality and objectivity, transparency, statistical confidentiality, quality commitment and adequacy of resources.

- **Principle 4: Assuring professional independence**
- **Principle 5: Assuring impartiality and objectivity**
- **Principle 6: Assuring transparency**
- **Principle 7: Assuring statistical confidentiality and data security**
- **Principle 8: Assuring the quality commitment**
- **Principle 9: Assuring adequacy of resources**

UN NQAF – principles on 4 levels

Level C. Managing statistical processes

International standards, guidelines and good practices are fully observed in the statistical processes used by the statistical agencies to develop, produce and disseminate official statistics, while constantly striving for innovation. The credibility of the statistics is enhanced by a reputation for good management and efficiency.

- **Principle 10: Assuring methodological soundness**
- **Principle 11: Assuring cost-effectiveness**
- **Principle 12: Assuring appropriate statistical procedures**
- **Principle 13: Managing the respondent burden**

UN NQAF – principles on 4 levels

Level D. Managing statistical outputs

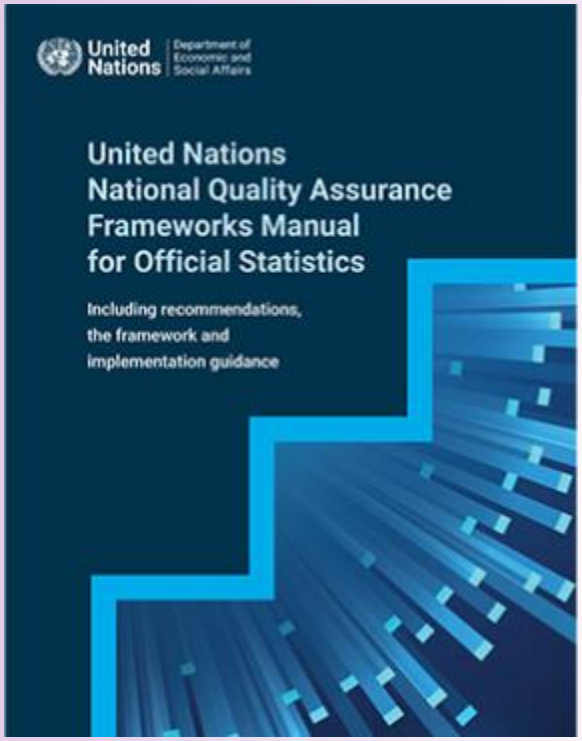
Output quality is measured by the extent to which the statistics are relevant, accurate and reliable, timely and punctual, readily accessible and clear for the users, and coherent and comparable across geographical regions and over time.

- **Principle 14: Assuring relevance**
- **Principle 15: Assuring accuracy and reliability**
- **Principle 16: Assuring timeliness and punctuality**
- **Principle 17: Assuring accessibility and clarity**
- **Principle 18: Assuring coherence and comparability**
- **Principle 19: Managing metadata**

Please note:

We will go into more detail on the second day.

The *Manual*



The United Nations National Quality Assurance Frameworks Manual for Official Statistics was adopted by the Statistical Commission of the Economic and Social Council of the United Nations in March 2019, and welcomed as an important contribution for guiding countries in the implementation of a national quality assurance framework, including for new data sources, new data providers, and data and statistics on the Sustainable Development Goal indicators.

Building on and replacing the generic template and guidelines adopted in 2012, the Manual contains recommendations on quality assurance for official statistics, the United Nations National Quality Assurance Framework and practical guidance for developing and implementing a national quality assurance framework.

The Manual is intended for use by anyone interested in or working on quality assurance of official statistics.

Expert Group on National Quality Assurance Frameworks

- The *Manual* was developed by the Expert Group on National Quality Assurance Frameworks (EG-NQAF) which has been re-establishment by the Statistical Commission at its 48th session in March 2017.
- 17 countries and 8 international and regional organizations joined the re-established Expert Group on National Assurance Quality Frameworks in 2017.
- The *Manual* builds on and replaces the generic United Nations National Quality Assurance Framework template and guidelines (UN NQAF template and guidelines) adopted in 2012.

Objectives

- The *Manual* provides guidance for developing and implementing a national quality assurance framework (NQAF)
- Aims at assuring the quality of official statistics throughout the entire national statistical system (NSS)
- Provides guidance for the engagement with statistics producers and data providers that are outside of the NSS that cooperate with NSS members in the production of official statistics
  - The *Manual* is responding to the new data ecosystem with new data sources, data providers and statistics producers aiming at safeguarding the role of official statistics as trusted source of information in a changing environment.
  - For example, in the future, national statistical offices (NSOs) may see their role as producer of official statistics diminished while adopting a new role as curator of data and statistics produced by others.

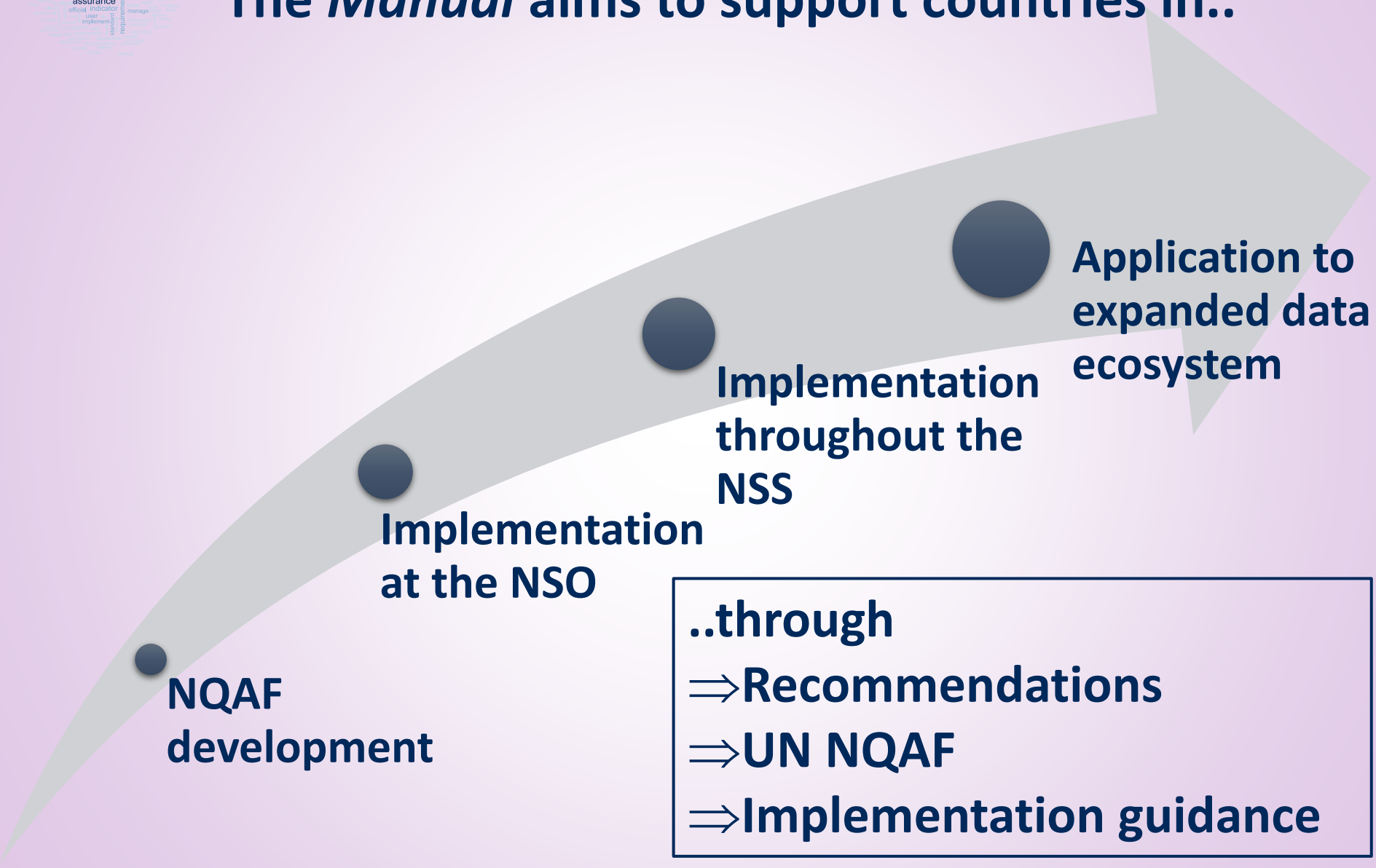
Objectives

Note:

The Manual 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 this Manual only as an additional reference point that supports what they are already doing, and a source of information on the application of quality assurance in different situations.

The *Manual* aims to support countries in..



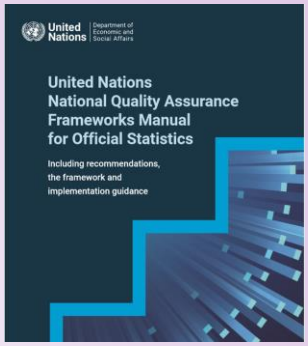
..through

⇒Recommendations

⇒UN NQAF

⇒Implementation guidance

The *Manual* overview



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

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

Uses of the *Manual*

Task	Manual part
Achieving an adequate mandate	Chapter 2
Developing NQAF	Chapter 5
Adopting or adapting framework for country needs	Chapter 3 and Annex A
Finding proper tools and instruments for NQAF implementation	Chapter 4
NQAF Implementation at the NSO	Chapter 5
NQAF implementation throughout the NSS	Chapter 6
Assuring quality for statistics from different data sources	Chapter 7
Addressing quality assurance for SDG indicators	Chapter 8
Finding references on quality assurance in the global statistical system (including the need for international comparability, especially for SDG indicators)	Chapter 9

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References	Chapter 9	Quality assurance in the global statistical system
UN NQAF Annex	Annex A	Detailed Checklist of elements to be assured

All chapters of the Manual can be read independently, hereby offering different entry points

…questions?

Please note that Chapter 1 contains useful working definitions of important terms such as “data providers and statistics producers”, “national statistical system” etc.

Some important terms to be noted…

- Data and statistics
- Data ecosystem
- Data providers and statistics producers
- Data sources
- Official statistics
- Open data
- Quality and quality dimensions in statistics

Chapter 2. United Nations Recommendations on quality assurance for official statistics

Scope

- The recommendations apply to the National Statistical System (NSS) comprised of the NSO and other producers of official statistics (other statistical agencies).
- However, under specific circumstances, as established by countries, the recommendations are proposed to be used by other statistics producers and providers of data that do not produce official statistics and that are not part (or frequently not considered part) of the NSS

Chapter 2. United Nations Recommendations on quality assurance for official statistics

Overarching Core Recommendations

#1 Integrate the Fundamental Principles of Offical Statistics in the legal and institutional frameworks

#2 Include the requirement for quality assurance in the statistical legislation

#3 Establish a national quality assurance framework (NQAF); all members of the national statistical system (NSS) commit to quality assurance

#4 Base or align your NQAF with international or regional quality frameworks

#5 Implement NQAF at the NSO, throughout the NSS and to data and statistics produced outside the NSS as appropriate

Chapter 2. United Nations Recommendations on quality assurance for official statistics

Recommendations that aim at the implementation of specific Fundamental Principles of Official Statistics

- **The recommendations #6 to #14 provide an interpretation of the Fundamental Principles of Official Statistics (FPOS) to facilitate their implementation and to stress their importance in the context of statistical quality assurance.**
- **They are directly derived from one or two FPOS or a repetition of one of its principles.**

Chapter 3 and Annex: United Nations National Quality Assurance Framework (UN NQAF

UN NQAF arranges its quality principles and associated requirements into four levels, ranging from the over-arching institutional and cross-institutional level through the statistical production processes to the outputs:

Level A: Managing the statistical system

Level B: Managing the institutional environment

Level C: Managing statistical processes

Level D: Managing statistical outputs

Chapter 4. Assessment tools and risk management

- 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.
- Metadata management
- Risk management

Chapters 5 & 6: Development and implementation of a national quality assurance framework

Chapter 5 Development and Implementation of NQAF at individual NSS members

Phase 1: Establishing the 'basics' (5.A)
(A reminder, or short introduction for newcomers)

→

Phase 2: Development and Adoption (5.B)
(For readers that do not have an NQAF already)

→

Phase 3: Implementation at the NSO and other producers of official statistics (5.C)
(Relevant to all readers)

→

→

Chapter 6 Implementation of quality assurance within the NSS

(For readers that are concerned with implementing NQAF throughout the NSS)

Coordination of the NSS (6.A)

→

Role of the NSS-wide bodies in NQAF implementation (6.B)

→

Implementation of system-wide measures – introducing all NSS members to quality assurance (6.C)

Chapter 7. Quality assurance for statistics compiled from different data sources

- This chapter highlight certain aspects of quality assurance that are specific, or are of special importance, to statistics that are produced (completely or partially) using specific data sources.
- This Manual distinguishes three data sources according to their purpose and by the entity responsible for their compilation.
  - Statistical data sources
  - Administrative data sources
  - Other data sources (list included)
- Discusses big data, new data sources and use of multiple sources

Chapter 8: Quality assurance of SDG indicators

- Challenges of assuring quality of data and statistics for the SDG indicators
- Roles of the different entities participating in this task
- Requirements and elemente to be assured that are of special importance, differentiated by the four levels:
  - Managing the NSS
  - Managing the statistical environment
  - Managing the statistical processes
  - Managing statistical outputs

Chapter 9: Quality assurance in the global statistical system

- The target audience of this chapter are statisticians in countries and regional and international organizations that are interested in the relationship between national and global statistics.
- Provides references regarding the commitments and obligations of countries and international and regional organizations to jointly assure the quality of data and statistics published at the global level.
- **It is recommended** to address disputes based on applicable professional standards, i.e. commitments and obligations.

Thank You

Visit as at https://unstats.un.org/unsd/methodology/dataquality