

## Annex

# Detailed list of elements to be assured

### Introduction

A1. The detailed list of elements to be assured is a supporting document aimed at assisting the implementation of the United Nations National Quality Assurance Framework (UN-NQAF) in chapter 3. It identifies possible activities, methods and tools that can provide guidance and evidence for the implementation of the UN-NQAF principles and requirements. It should be noted that not all elements from the list are equally necessary or relevant for all countries. However, if they are applicable, they should be followed or assured.

A2. The list comprises elements to be implemented or secured at both the system/institutional and the process/product level. The order of listing from general to more specific elements indicates the levels, but the responsibilities are normally clear from their content and the context given by the requirements they refer to.

A3. The elements to be assured have been compared with the principles of the Open Data Charter<sup>89</sup> to reflect best practices for the dissemination of statistics.

<sup>89</sup> <https://opendatacharter.net/>.

## Level A: Managing the statistical system

### *Principle 1: Coordinating the national statistical system*

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 NSO or other body is defined in a statistical law.
- The statistical law specifies the requirements for official statistics and the scope of the 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.

Requirement 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.

- The NSO or other body is tasked with the coordination of the NSS.
- The NSO and other statistical agencies have mechanisms to ensure the coordination (including the exchange of data and statistics within the NSS) and the quality of official statistics.

- An NSS-wide (central) coordination body (which is by default part of the NSS and is typically the NSO) sets, monitors and reviews guidelines for the development, production and dissemination of official statistics.
- A central coordination body establishes and maintains engagement with advisory bodies, academic institutions and other regional and international bodies as appropriate.
- A central coordination body coordinates data collection to improve cost-effectiveness and reduce respondent burden, in particular with regard to coordinating sample surveys.
- A central coordination body monitors the use of agreed standards, concepts, classifications and methods throughout the NSS.
- A central coordination body promotes and enhances data sharing within the NSS and liaisons with members of the extended data ecosystem regarding the sharing of data.
- A central coordination body promotes the sharing of technical knowledge and good statistical practices and ensures the provision of training, including on the production of official statistics and SDG indicators.
- Processes for the evaluation of the quality of the statistics are developed and applied within the NSS.

Requirement 1.3: There is a mechanism for considering statistics produced outside the national statistical system and, if appropriate, for those statistics to become official.

- The body coordinating the NSS evaluates statistics produced outside the NSS for use as official statistics or alongside official statistics. Examples of such statistics are some of the SDG indicators.
- The NSS-wide (central) coordination body or a task force composed of members of various statistical agencies can be given the responsibility for the evaluation of the quality of relevant statistics outside the NSS (e.g., some SDG indicators) as needed.
- There is a unit such as a task force that discusses and provides support for the use of new data sources within the NSS.

Requirement 1.4: There is a national plan or programme for the development and production of official statistics.

- There is a multi-year national plan for the development and production of official statistics, which can take the form of a National Strategy for the Development of Statistics.
- The multi-year national plan for the development and production of official statistics covers the entire NSS.
- The multi-year national plan should address quality assurance.
- Annual plans for the NSS members supplement the multi-year NSS-wide plan.
- The multi-year national plan is established in close consultation with statistics producers, users and data providers.
- The multi-year national plan for the development and production of official statistics is approved for implementation by an NSS-wide governance body and/or a higher-level government or a legislative body.
- The programmes and activities of the multi-year national plan are monitored on a regular basis by the NSS-wide (central) coordination body.

*Principle 2: Managing relationships with data users, data providers and other stakeholders*

Requirement 2.1: Stakeholders are identified and consulted regarding their interests, needs and obligations.

- The statistical agencies clearly identify all their stakeholders.
- Processes are in place to consult stakeholders about their concerns, interests, needs and obligations.
- Stakeholders are kept informed of actions taken to address their needs and concerns.

Requirement 2.2: The statistical agencies have a strategy and institutional arrangements are in place to engage with their users.

- User needs and how to engage with users are reflected in the statistical agencies' strategies, such as the strategy for the development of statistical outputs and the dissemination strategy, as well as for NSS-wide relevant strategies such as the National Strategy for the Development of Statistics.
- Service agreements or similar arrangements with the main users of the statistics are in place (e.g., with regard to what will be supplied by the agency, the quality of the statistics, the dissemination format, etc.).
- Statistical agencies have press offices, hotlines and a central email contact who responds to all user inquiries in a timely manner.
- Users can engage with statistical agencies and request information in their preferred means of communication, such as through telephone, email and other common means of communication.
- Processes and arrangements (such as a user committees) are in place so that users can advise statistical agencies about their emerging needs and priorities and during the development of new or review of existing statistics.
- There are subject domain-specific user committees.

See also principle 14 on assuring relevance.

Requirement 2.3: The statistical agencies continuously maintain and develop cooperation with funding agencies, academic institutions and international statistical organizations, as appropriate.

- The statistical agency's workplans and budgets are shared with the funding agency as appropriate to ensure mutual understanding of funding requirements and trade-offs.
- Statistical agencies maintain and develop cooperation with the scientific community to develop new statistics, improve methodology and promote the use of statistics.
- Statistical agencies cooperate with international and regional organizations in the area of statistics and with the statistical organizations of other countries.

See also principle 1 on coordinating the national statistical system.

Requirement 2.4: The national statistical office and, if appropriate, other statistical agencies have the legal authority or some other formal provision to collect data for the development, production and dissemination of official statistics.

- The statistical law provides appropriate provisions to guarantee the NSO and, if appropriate, other statistical agencies the right to collect data for statistical purposes through surveys and censuses.

- Based on the legislation, the statistical agencies are able to apply appropriate sanctions, such as fines, if a response to obligatory statistical surveys or censuses is not received.

Requirement 2.5: The national statistical office and, if appropriate, other statistical agencies have the legal authority or some other formal provision to obtain administrative data and adequate access to those data from other government agencies for statistical purposes.

- The statistical law provides appropriate provisions to guarantee the NSO and, if appropriate, other statistical agencies the right to obtain or access administrative data in a timely manner.
- Where statistical agencies do not have a legal right to obtain administrative data, memorandums of understanding are in place that provide such access.
- Statistical agencies' access to administrative data are free of charge.
- Agreements with owners of administrative data are in place to operationalize data access which describe technical conditions for access and possibilities for linking the data with data from other administrative data sources.
- Statistical agencies are involved in the design and development of administrative data sets in order to make them suitable for statistical purposes; this involvement extends to the possible discontinuation of such data sets.

Requirement 2.6: The national statistical office and, if appropriate, other statistical agencies have the legal authority or some other formal provision and related agreements to access and use data (including big data) maintained by private corporations or other non-governmental organizations for statistical purposes on a regular basis, including for testing and experimentation.

- The statistical law provides appropriate provisions to guarantee the NSO and, if appropriate, other statistical agencies the right to obtain or access, in a timely manner, data held by private corporations or other non-governmental organizations for statistical purposes (e.g., all corporations that provide services to individuals and legal entities residing in the country).
- The statistical law foresees adequate sanctions to ensure access to privately held data where appropriate (such as fines for not granting such access).
- Where statistical agencies do not have a legal right to obtain access to data maintained by corporations or other non-governmental organizations, memorandums of understanding are in place that provide such access.
- Statistical agencies consider the relevance and the scope of data requested.
- The access and use of privately held data follow procedures agreed between the statistical agencies and the owners or holders of the data.

Requirement 2.7: The national statistical office cooperates with and provides support and guidance to data providers.

- The NSO regularly consults with data providers and maintains cooperation with the providers of administrative data and with corporations, businesses and other organizations that hold data to strengthen the statistical value and usage of these sources.
- Quality reports for administrative data are developed in cooperation with the NSO and the data owner and describe accuracy, completeness, timeliness and punctuality, among other things.<sup>90</sup>

<sup>90</sup> See, for example, Piet Daas and others, "Report on methods preferred for the quality indicators of administrative data sources", BLUE-Enterprise and Trade Statistics, 28 September 2011. Available at [www.pietdaas.nl/beta/pubs/pubs/BLUE-ETS\\_WP4\\_Del2.pdf](http://www.pietdaas.nl/beta/pubs/pubs/BLUE-ETS_WP4_Del2.pdf).

- Holders of administrative data, businesses and other organizations receive feedback on the quality of the data provided, allowing for further improvements.
- Partnership agreements with data providers are in place.

*Principle 3: Managing statistical standards*

Requirement 3.1: The statistical agencies cooperate in the development and implementation of international, regional and national statistical standards.

- The NSO actively works with other statistical agencies and international and regional statistical organizations in developing, reviewing, promoting and implementing statistical standards.
- The NSO has an organizational unit responsible for facilitating and coordinating the adoption and development of international, regional and national statistical standards and for supporting statistical programmes/domains in their efforts to adopt and develop such standards.
- All relevant staff in statistical agencies are aware of statistical standards and any changes made to them.
- There is a repository and a list of all standard classifications available in all statistical agencies.
- The process for originating, developing and approving statistical standards involves statistics producers, data providers and data users.
- The impact of the adoption of new statistical standards is assessed, documented and communicated to users; where applicable, conversion tables are provided.
- The statistical agencies use conceptual frameworks, such as the System of National Accounts, that provide a basis for integrating statistical information.
- Statistical standards (concepts, definitions, classifications, etc.) are regularly reviewed.

Requirement 3.2: The national statistical office provides support and guidance to all data providers and producers of official statistics in the implementation of statistical standards.

- The NSO monitors the extent to which statistical standards are used by data providers and producers of official statistics.
- Periodic reports are prepared with regard to compliance with international, regional and national statistical standards.
- Statistical standards are communicated and made available to all data providers and producers of official statistics.
- Plans and schedules for the development and application of new standards are communicated in advance.
- The NSO assists other statistics producers and data providers in the implementation of international, regional and national statistical standards as appropriate.

Requirement 3.3: Divergences from the international, regional or national statistical standards are kept to a minimum, and are documented and explained to all stakeholders.

- Concordance tables for international, regional and national standard classifications are developed and made available in cases where diverging standards are used.
- The adopted standards (concepts, definitions, classifications, etc.) are explained to all stakeholders.
- Stakeholders are informed about compliance with international, regional and national statistical standards.

## Level B: Managing the institutional environment

### *Principle 4: Assuring professional independence*

Requirement 4.1: A law or other formal provision explicitly declares that statistical agencies are obligated to develop, produce and disseminate statistics without interference from other government agencies or policy, regulatory or administrative departments and bodies, including from within the statistical agencies, private sector or any other persons or entities.

- The professional independence of the NSO and other producers of official statistics, such as statistical units within ministries, departments and agencies at the different levels of governments, is guaranteed by the laws and regulations under which the ministries, departments and agencies operate.
- If there is no law or formal provision declaring the necessity of professional independence, there are traditions or cultures of professionalism, historical precedents or conventions that are clearly recognized as essential to the credibility of the statistical results of the statistical agencies.

Requirement 4.2: The appointment of the heads of the national statistical office, and other statistical agencies where appropriate, is based on professional criteria and follows transparent procedures. Reasons for dismissal cannot include reasons affecting professional independence. The heads of the statistical agencies are of the highest professional calibre.

- National legislation provides a clear and detailed description of the procedure for the appointment and dismissal of the head of the NSO.
- The rules applied for appointing, assigning positions and responsibilities and dismissing the heads of the statistical agencies are based on professional competence and are transparent and free from political considerations.
- Processes are in place to ensure that the heads of the statistical agencies are of the highest professional calibre.
- The head of the NSO has sufficiently high hierarchical standing to ensure access to the political and administrative leadership of government bodies.
- The heads of statistical units within other statistical agencies have the necessary qualifications, knowledge and capacity.
- The basis and process for the termination or removal of the head of the NSO and the heads of the statistical units within government that produce official statistics are specified in the legal framework and administrative regulations. These cannot include reasons related to professional or scientific independence.

Requirement 4.3: The heads of the national statistical office, and other statistical agencies where appropriate, have sole responsibility over the decisions on statistical methods, standards and procedures, and on the content and timing of statistical releases.

- The head of the NSO and the heads of the statistical units within government that produce official statistics decide independently, on the basis of professional considerations, on the statistical methods, standards and procedures for the development, production and dissemination of official statistics.
- The reporting of the NSO to its administratively superordinate government bodies and to ministries, department and agencies does not affect its professional independence.

*Principle 5: Assuring impartiality and objectivity*

Requirement 5.1: There is a law or formal provision in force, which is publicly available, that specifies that statistical agencies should develop, produce and disseminate statistics following professional standards and treat all users in the same way.

- Professional cultures and traditions assure the impartiality and objectivity of the statistics produced by the statistical agencies independently from the existence or absence of any laws or formal provisions.
- The objectivity and impartiality of official statistics is recognized (and not disputed) by neutral observers and the public (e.g., measured by image studies).

Requirement 5.2: The statistical agencies implement a declaration or code of conduct or ethics which governs statistical practices, and compliance with it is followed up.

- There are ethical guidelines or a code of conduct for assuring impartiality and objectivity.
- The guidelines are available to the public.
- The implementation of the guidelines is followed up.

Requirement 5.3: Data sources and methodologies are chosen on an objective basis.

- Sources, concepts, methods and processes for the development, production and dissemination of data are chosen on the basis of statistical considerations, national and international principles and best practices.

Requirement 5.4: Statistical releases are clearly distinguished from political/policy statements.

- Statistical releases and statements made to the media are objective and based strictly on the available evidence and do not take any position on a political issue.
- Appropriate internal and external communication strategies exist that include recognizable logos, designs or formats for the products of statistical agencies, which identify them as being unaffiliated with any political or policy bodies.

Requirement 5.5: Statistical release dates and times are announced in advance.

- A publicly available and easily accessible release calendar containing information on the releases planned in the upcoming 12-month period exists.
- Statistics are released at a fixed date and time.
- Changes in the release calendar are announced in advance and their reasons are explained.
- The sharing of statistical results ahead of the official release (a “privileged pre-release”) is kept to a minimum and is well justified and strictly controlled and documented.

Requirement 5.6: In cases in which errors are detected, they are corrected as soon as possible, and users are informed as to how they affected the released statistics.

- There is an established policy on how to correct published data when errors are discovered. The error treatment policy is publicly available.

Requirement 5.7: The statistical agencies comment publicly on statistical issues, misinterpretation and misuse of official statistics, as appropriate.

- There is a formal policy or well-established custom entitling statistical agencies to comment publicly on statistical issues, criticisms, misinterpretations and misuses of official statistics.
- The statistical agencies respond, as appropriate, to negative media reporting to facilitate fair reporting of their positions.

### *Principle 6: Assuring transparency*

Requirement 6.1: The terms and conditions for producing and disseminating official statistics are available to the public.

- A standard procedure exists for ensuring that respondents understand the legal basis for a survey and the confidentiality provisions for the data that are collected.
- Information on data sources, statistical concepts and methods used for the development, production and dissemination of official statistics are publicly available.
- The information on statistical standards are available to the public.
- Advance notice of major changes in methodology, source data or statistical techniques is given.
- The dissemination policy is shared with the public.
- Privileged pre-releases of statistical results are disclosed.

Requirement 6.2: The terms and conditions for the governance and management of statistical agencies are available to the public.

- The procedures to be followed for the appointment and dismissal of heads of the statistical agencies and the hiring and release of staff are publicly available.
- The reporting and dialogue of statistical agencies with administratively superordinate government bodies is well defined, established and known to the public.
- The work programmes of the statistical agencies and periodic reports to describe progress are made available to the public on a regular basis.

### *Principle 7: Assuring statistical confidentiality and data security*

Requirement 7.1: Statistical confidentiality is guaranteed by law.

- There is a law or some other clear formal provision in force that mandates the proper management of information received from respondents and data providers to ensure statistical confidentiality and data security.

Requirement 7.2: Appropriate standards, guidelines, practices and procedures are in place to ensure statistical confidentiality.

- Guidelines and instructions on the protection of statistical confidentiality throughout the statistical business process are provided to all staff of the statistical agencies.

- There are regular and continuous training programmes for all staff on the concept of statistical confidentiality and best practices to ensure the privacy of the information provided.
- The organizational structure and arrangements for the development and implementation of practices for ensuring statistical confidentiality is adequate to cope with needs.
- Staff sign confidentiality agreements upon their appointment, which are also valid after staff leave the agency.

Requirement 7.3: Strict protocols to safeguard data confidentiality apply to users with access to microdata for research or statistical purposes.

- Clear conditions for granting access by researchers to confidential data for scientific purposes are set in the statistical law or other formal provision.
- Confidentiality rules, disclosure control and microdata access procedures apply throughout the statistical business process.
- The statistical agencies monitor the use of microdata sets to identify any circumstances in which data confidentiality may be breached (e.g., through file matching), and take immediate corrective action to address such a situation.

Requirement 7.4: Penalties are prescribed for any wilful breaches of statistical confidentiality.

- Legal or other provisions are in place that allow administrative, penal and disciplinary sanctions for the violation of statistical confidentiality.
- Information on the provisions that allow sanctions for the violation of statistical confidentiality is shared with all staff and is available to the public.

Requirement 7.5: The security and integrity of data and their transmission is guaranteed by appropriate policies and practices.

- An IT security policy is in place and is known to the staff.
- Following the IT policy, appropriate physical security measures and processes are in place to ensure data and database security, in accordance with best practices and international standards.
- Regular security audits of the data security system are carried out.
- All access to data repositories and transmission channels is monitored.
- While data are being transferred, risk of a breach is assessed and appropriate procedures are applied to eliminate or minimize this risk.

Requirement 7.6: The risk that individual respondents may be identified is assessed and managed.

- There should be a balance between the acceptable level of risk of identification of individual respondents and the usability of the data.
- Appropriate processes are in place to assess the risk of disclosure of sensitive information and the risk that individual respondents can be identified from the public release of statistics or of microdata, and procedures are applied in line with the data dissemination policy to minimize this risk.
- All procedures taken to adequately reduce the risk of identification are properly documented and made available as part of the metadata related to the statistical data set.
- Users are made aware that procedures to reduce the risk of identification have been implemented and that such procedures could lead to a loss of information.

*Principle 8: Assuring commitment to quality*

Requirement 8.1: There is a quality policy or a statement of the statistical agency's commitment to quality, which is publicly available.

- The statistical agency's policy, declaration or message about its commitment to the quality of statistics is made publicly available and clearly conveys and promotes the shared concern for quality of all of its staff and includes information about trade-offs affecting the statistical work programme.
- The statistical agency has quality guidelines that are made available to external users, at least in a summarized version.

Requirement 8.2: The statistical agencies promote a culture of continuous improvement.

- Methodology and processes are regularly documented.
- Good statistical practices are exchanged among and between statistical agencies.
- Procedures are in place to ensure that the required documentation on quality is regularly updated.
- A quality assurance plan or similar mechanism is in place that describes the work standards, formal obligations (such as laws and internal rules) and quality control actions that prevent, monitor and evaluate errors and control the statistical production process.
- Workplans, schedules and standard forms or templates are used for facilitating the updating of the documentation of quality assurance procedures and actions in a consistent way.
- Statistical agencies use an NQAF as a basis for regular quality assessments (self-assessments and other assessments).
- Statistical agencies use an NQAF which is based on one of the accepted global or regional framework.
- General quality systems or frameworks such as total quality management and ISO 9000 are utilized in conjunction with the NQAF.
- Quality initiatives of international and regional statistical bodies such as the European Statistical System are followed up, as appropriate.

Requirement 8.3: There is a specific body responsible for quality management or the coordination of quality management within the statistical agency, and it receives necessary support to fulfil this role.

- A quality manager, committee, unit or group of coaches or advisers is assigned responsibility for quality management.
- An agency-wide data quality task force is established and meets regularly.
- Quality issues are discussed with and by management regularly (e.g., at an annual quality review meeting).

Requirement 8.4: The national statistical system staff receive training on quality management.

- Staff training and development programmes are in place to ensure that staff are aware of the statistical agency's quality policy, including the use of an NQAF, and that staff have an understanding as to how quality is assured.
- A staff awareness "campaign" is undertaken to emphasize the statistical agency's commitment to quality.

Requirement 8.5: Guidelines for implementing quality management are defined and made available to the public.

- Guidelines for implementing quality management are produced and issued which:
  - Describe the quality principles and framework followed
  - Describe the entire statistical process and identify relevant documentation for each stage of production
  - Describe the methods for monitoring the quality at each stage of the statistical production process
  - Identify the indicators (quality measures) for evaluating the quality of the main stages of production, including indicators for source data
- The guidelines, methodological manuals and handbooks on recommended practices for quality assurance are made available to the public.
- Mechanisms are in place to assure the quality of data collection (including the use of administrative data and other sources) and data editing.

Requirement 8.6: Indicators on statistical output quality are regularly measured, monitored, published and followed up to improve statistical products and processes.

- Quality reports that serve both producer and user perspectives are prepared, published as appropriate and updated regularly.
- Quality indicators are defined, measured and monitored for follow-up and improvements. Examples of quality indicators include:
  - References in media, hits on websites, results from user satisfaction surveys (relevance)
  - Standard deviations and other measures of accuracy, response rates (accuracy)
  - Number and size of revisions (reliability)
  - The length of time between the end of a reference period and the dissemination of the statistics (timeliness)
  - Rate of statistics published when announced (punctuality)
  - Respondent burden

Requirement 8.7: Statistical products and processes undergo periodic reviews.

- Periodic quality reviews of key products and processes to assess adherence to internal guidelines and international standards are performed.
- Reviewing teams are set up in which both internal and external experts can participate.
- The statistical agency's internal reviewers are trained in auditing methods and tools.
- Improvement actions arising from the result of quality reviews are defined and scheduled for implementation.
- Top management is informed of the results of reviews so they can follow up on improvement actions.
- Benchmarking of key statistical processes with other statistical agencies is carried out to identify good practices.
- Procedures are in place to monitor and manage the quality of different stages of the statistical production according to the GSBPM.

- Trade-offs within quality are systematically examined (e.g., trade-offs among accuracy, timeliness and costs).
- External experts (including from international organizations) conduct quality reviews, such as reviews of key statistical domains (e.g., the IMF Reports on the Observance of Standards and Codes) or other reviews, such as peer reviews, external audits and rolling reviews.

Requirement 8.8: Risk analyses addressing the quality of important statistical products and processes are performed.

- Risk and quality management are closely coordinated (e.g., through institutional arrangements and regular meetings if responsibilities for these activities are set out differently).
- Risks linked to core recommendations and principles of the NQAF (e.g., lack of independence and confidentiality breaches) are analysed and measures taken if needed to improve compliance.
- Risk analyses addressing the quality of different stages of the statistical production are conducted according to the GSBPM.
- Risk analyses addressing the quality of important statistical products such as population statistics and censuses, national accounts and consumer price indices are performed (e.g., risk of poor accuracy expressed by errors, poor timeliness and lack of comparability).

#### *Principle 9: Assuring adequacy of resources*

Requirement 9.1: Financial, human and technological resources are sufficient to implement the statistical work and development programme.

- A resource mobilization strategy such as a National Strategy for the Development of Statistics is in place.
- The annual workplan is feasible given the available resources.
- Costs (staff costs and other costs) of each stage of the production process are measured.

Requirement 9.2: Planning and management principles are aimed at the optimal use of available resources.

- Information technology is employed to increase efficiency.
- Standardization, integration and automatization of statistical production and dissemination are pursued to increase efficiency of operations and to save costs.

Requirement 9.3: The statistical agencies' use of resources is reviewed.

- Indicators on the use of human and financial resources are monitored centrally and regularly reported to management.
- The use of human resources is evaluated annually on the basis of established guidelines and procedures. The evaluation covers the allocation, performance and training needs of staff.
- Staff opinion/satisfaction surveys are conducted regularly.

## Level C: Managing statistical processes

### Principle 10: Assuring methodological soundness

Requirement 10.1: The methodologies applied by the statistical agencies are consistent with international standards, guidelines and good practices and are regularly reviewed and revised as needed.

- Organizational structures for the development and application of sound statistical methods are commensurate to needs.
- Review and reporting processes are in place that allow the management of the statistical agency to be assured that sound methodological approaches have been adopted and applied throughout the production process.
- The methodologies of surveys and the use of administrative data and other sources of data are evaluated periodically.
- Sampling design is based on sound methodology.
- Proper follow-up procedures are planned and implemented in cases of non-response.
- Statistical editing procedures and imputation methods are based on sound methodology.
- When statistical modelling is used in the statistical production process (e.g., for seasonal adjustment), the validity of model assumptions is carefully considered and the impact on final estimates is evaluated.
- Statistical agencies review the methods used by external partners for the compilation of data and the production of statistics.

Requirement 10.2: The statistical agencies recruit qualified staff and conduct regular programmes to enhance their methodological skills.

- Staff of the statistical agency are recruited on the basis of their academic background, qualifications and experience.
- Appropriate qualifications requirements are specified for all posts.
- Training and development programmes are in place to ensure the staff acquire and continuously update their methodological knowledge.
- Staff skills are regularly updated so that staff are able to utilize new data sources and tools and can easily change positions.
- Attendance of staff at relevant training courses and/or at national or international conferences is encouraged.

Requirement 10.3: The statistical agencies choose data sources taking into account accuracy and reliability, timeliness, cost, the burden on respondents and other necessary considerations.

- The use of alternative sources of data, including existing surveys and census, administrative data, big data or other sources of data, is constantly evaluated.
- Quality has to be assessed when using administrative data<sup>91</sup> or other data sources. Ideally, when using administrative data, it should be assured that:
  - The population is consistent with the statistical output requirements
  - The classifications are appropriate
  - The underlying concepts are appropriate
  - The records are complete and up to date

<sup>91</sup> See, for example, Piet Daas and others, "Report on methods preferred for the quality indicators of administrative data sources", BLUE-Enterprise and Trade Statistics, 28 September 2011. Available at [www.pietdaas.nl/beta/pubs/pubs/BLUE-ETS\\_WP4\\_Del2.pdf](http://www.pietdaas.nl/beta/pubs/pubs/BLUE-ETS_WP4_Del2.pdf).

- The geographical coverage is complete and the measurement units are appropriately defined/identified
- When using other data sources (such as big data), the specific methodological challenges such as those linked to the statistical population and the veracity and volatility of such data have to be considered.

Requirement 10.4: The registers and the frames for surveys are frequently evaluated and adjusted.

- A systematic approach is in place for updating the survey frames to ensure accurate coverage of the target population.
- For all surveys, the appropriate statistical population frames are updated regularly.
- Information gathered during the conduct of surveys is used to assess and improve the quality of the frame, especially with regard to its coverage and the quality of the contact variables and the auxiliary information (variables used in the sampling design).

Requirement 10.5: The statistical agencies cooperate with the scientific community to improve methods and promote innovation in the development, production and dissemination of statistics.

- Collaboration with the scientific community is in place, for example through conferences, workshops, task forces and training/courses, to discuss relevant methodological and technological developments (e.g., with regard to exploiting new data sources).
- There are agreements in place with academic institutions on cooperation and the exchange of qualified personnel.
- Staff collaborate on methodological issues with colleagues at the international level.
- Regular participation and presentations at relevant national and international conferences is encouraged for the exchange of knowledge and experiences.
- National and international conferences, seminars, workshops or similar events with the participation of the scientific community are organized by the statistical agencies.

#### *Principle 11: Assuring cost-effectiveness*

Requirement 11.1: The costs of producing all individual statistics are measured and analysed, and mechanisms are in place to assure the cost-effectiveness of statistical activities or processes.

- There is a system for registering cost and time used for all statistical products, and estimating time used on the main processes should be possible.
- The costs of producing the statistics are well documented at each stage of the production process and are regularly reviewed and analysed across statistical products to assess the effectiveness of their production.
- Cost-benefit analyses are carried out to determine the appropriate trade-offs in terms of data quality.
- The cost-effectiveness of every statistical survey is assessed.
- The need for each survey variable to be collected is justified.

- There is an ongoing review process that considers whether a particular programme is still operating in the most cost-effective way to meet its stated requirements.
- Data collection instruments are designed to minimize coding and editing cost and time.

Requirement 11.2: Procedures exist to assess and justify demands for new statistics against their cost.

- Demands for new statistics are regularly registered and assessed by statistical experts with regard to the proposed methodology and associated costs, and are discussed by management, based on inputs from users and in cooperation with other stakeholders.
- Before contemplating a new data collection, there are mechanisms to review whether already available data sources can be utilized with minimal impact on their purpose and quality.
- When introducing new statistics, a cost-benefit analysis is conducted.

Requirement 11.3: Procedures exist to assess the continuing need for all statistics, to determine whether any can be discontinued to free up resources.

- There are regular discussions by management on the usefulness of all statistics; the discussions include inputs from users, such as the results of user satisfaction surveys.
- The usage of different statistical products, including statistical databases, is monitored and assessed to evaluate their relevance.
- Users and stakeholders are informed and consulted about the possible discontinuation of statistical outputs.

Requirement 11.4: Modern information and communication technologies are applied to improve the performance of statistical processes.

- An appropriate IT strategy exists and is regularly reviewed and updated to improve the effectiveness and efficiency of the statistical processes.
- The IT architecture and hardware infrastructure are regularly reviewed and updated, and possibilities for innovation and modernization are identified.
- Routine clerical operations and statistical processes (e.g., data capture, coding, data editing, data validation, data exchange) are automated where possible and are regularly reviewed.
- Centralized IT and methodological units exist and provide possibilities for the pooling of resources and investments.

Requirement 11.5: Proactive efforts are made to improve the statistical potential of administrative data and other data sources.

- Statistical agencies provide input to the legislative process to obtain and maintain access to administrative and other data sources for statistical purposes, if needed.
- Appropriate arrangements (e.g., service-level agreements or national legislation) with owners or holders of administrative data and other data collections are made and updated as needed, specifying the access to and flow of data and metadata and other relevant aspects.
- An assessment of possible administrative data sources is carried out prior to launching any new survey.

- Data linking and integration methods are proactively pursued while ensuring data security and privacy.
- Quality reports for administrative and other data used for official statistics are established by the responsible statistical agency in cooperation with the data owners or holders.

Requirement 11.6: The statistical agencies define, promote and implement integrated and standardized production systems.

- The statistical agencies have developed strategies to move to a more integrated and standardized statistical production system within their organization.
- The statistical agencies promote, share and implement standardized solutions that increase effectiveness and efficiency.
- The statistical business architecture of the statistical agency is based on international standards and tools such as the GSBPM, the GAMS0, the Common Statistical Production Architecture and SDMX.

### *Principle 12: Assuring appropriate statistical procedures*

Requirement 12.1: Statistical processes are tested before implementation.

- The testing strategy is developed as part of the design phase of the statistical business process model.
- Data capture procedures and data collection tools and instruments such as electronic systems are tested to ensure simplicity and minimal intrusion on privacy, and are adjusted if required before their implementation.
- Survey questionnaires are tested using appropriate methods (e.g., pilot survey, focus groups, etc.).
- Collection systems for administrative and other data are tested before use.
- Data treatment and data processing procedures are tested and adjusted, if required and possible, prior to their actual application.
- Test results are taken into account in the implementation of the production process and are approved.
- In the case of integrating data from one or more sources, the quality of the linkage procedures is tested.

Requirement 12.2: Statistical processes are well established and regularly monitored and revised as required.

- The statistical agencies have documented procedures and guidelines that contain recommendations for appropriate methodologies to be used at different steps of the statistical production process.
- Documentation of production processes should follow the GSBPM.
- A policy for archiving data and statistics is in place and is followed.
- Statistical procedures employ internationally recognized statistical techniques.
- Data of all data sources are reviewed and validated to identify potential problems, errors and discrepancies such as outliers, missing data and miscoding.
- When coding is done through an automated process, a team of well-trained coders is assigned to verify the automated coding and to handle un-coded cases.

- The effects of data editing and imputation are analysed as part of assessing the quality of the data collection.
- All statistical databases are designed and arranged in a way that allows and facilitates data linkage, using unique identifiers for statistical units as appropriate while ensuring data security and privacy.

See also principle 10 on assuring methodological soundness and principle 11 on assuring cost-effectiveness.

Requirement 12.3: Procedures are in place to effectively use administrative and other data sources for statistical purposes.

- Statistical agencies use tools and guidelines to assess the quality of the data of administrative and other data sources.
- Appropriate processes and software applications for the collection, processing and analyses of data of administrative and other data sources have been developed and implemented.
- Owners or holders of administrative and other data sources inform the statistical agencies of any changes in the data production process.
- Metadata related to administrative or other data sources are available to the statistical agencies, including concepts and definitions, classifications, coverage compared to target population and other quality aspects.
- Documentation exists that describes how data from administrative and other sources meet the statistical requirements in terms of definitions, concepts and coverage, among other things.

See also principle 11 on assuring cost-effectiveness.

Requirement 12.4: Revisions of statistics follow standard and transparent procedures.

- A revision policy that follows international standards and recommendations exists and is made public.
- Guidelines for revisions exist and are followed.
- Revisions of the published statistics are accompanied by metadata that provide necessary explanations.
- Indicators expressing the amount and types of revisions are computed and evaluated for improvement.

Requirement 12.5: Metadata and documentation of methods and different statistical processes are managed throughout the processes and shared as appropriate.

- There is a policy on metadata documentation linked to the statistical production processes.
- The policies and standards for maintaining and updating metadata are followed.
- Work on preparing statistics and their related metadata should be done in parallel.
- Metadata are captured throughout the statistical business process following the GSBPM and stored in a metadata management system.
- Statistical methods and processes are documented in such a way that allows for the recreation of the entire statistical production process.

See also principle 19 on managing metadata.

*Principle 13: Managing the respondent burden*

Requirement 13.1: The range and detail of requested information is limited to what is necessary.

- The availability and suitability of existing surveys and administrative or other data sources are explicitly considered before suggesting a new survey.
- Before establishing a new survey, a discussion should take place as to the possibility of producing the required data with less respondent burden by modifying or amending an existing survey or by linking the new survey with an existing survey (integrated survey system).
- The collection of each data item of a survey has to be explained and justified.
- The collection of any data items that are identical or similar to those collected in another survey is limited to what is considered necessary for verification and possible data linkage purposes.
- When possible, surveys or parts of the information to be collected in the surveys are extracted or derived from available administrative registers.
- The burden on respondents is measured and included in a set of quality indicators and in the quality reports.

Requirement 13.2: Mechanisms are in place to promote the value and use of statistics to respondents.

- Information packages that provide respondents with important and necessary information about the survey and explain the value of official statistics are made available.
- Respondents are provided with the final reports or results of the census or sample survey in which they participated.
- Initiatives with community groups, schools, business advocates and others are undertaken to raise awareness of the value of official statistics.
- Electronic products are developed that give necessary statistical information to businesses and individuals, and these products are promoted through initiatives with communities and respondents.
- Social media is used to promote participation in surveys and censuses.
- Standard practices are in place to obtain feedback from respondents and to respond to their requests and complaints in a regular manner.

Requirement 13.3: Sound methods, including IT solutions, are used in surveys to reduce or distribute respondent burden.

- Appropriate sampling techniques are used to minimize sample sizes to achieve the target level of accuracy.
- Sample surveys are coordinated to distribute the burden on respondents.
- Multiple modes of collection are offered to respondents, including electronic surveys.
- Collection of data is done at the most appropriate time of the day and the year.

Requirement 13.4: Data sharing, data linkage and the use of administrative and other data sources are promoted to minimize respondent burden.

- Documentation of data already available within the NSS, including archived data, exists and is shared.
- Procedures and technical tools for data sharing and data linkage within the NSS (e.g., formal agreements, web services, common databases) exist.

- Data repositories are shared among statistical agencies for the production of official statistics and in compliance with confidentiality policies.
- Information on the quality of data to be linked exists (e.g., on coverage and linkage possibilities).
- Use of administrative and other data as an alternative to survey data for producing official statistics is promoted throughout the NSS

See also principle 2 on managing relationships with data users, data providers and other stakeholders, principle 11 on assuring cost-effectiveness and principle 12 on assuring appropriate statistical procedures.

## Level D: Managing statistical outputs

### *Principle 14: Assuring relevance*

Requirement 14.1: Procedures are in place to identify users and their needs and to consult them about the content of the statistical work programme.

- There is legislation or some other formal provision which includes an obligation to consult with the main users of the statistics.
- Structured and periodic consultation processes (e.g., advisory councils and committees or working groups) with key stakeholders and users are in place to review the content of the statistical programme and the usefulness of existing statistics, and to identify requirements for new statistics.
- Feedback from a user support service, centre or hotline is analysed to understand and identify user needs.
- Data on the use of statistics (e.g., web analytics, number and types of downloads, subscribers to reports) are collected and analysed to improve statistical outputs.

Requirement 14.2: Users' needs and requirements are balanced, prioritized and reflected in the work programme.

- Users' priority needs are met and reflected in the work programme of the statistical agency.
- Procedures are in place to prioritize various user needs in the work programme and strategic goals.
- Data on the use of statistics are analysed to support the setting of priorities.
- A periodic evaluation of the work programme is carried out to identify emerging needs and lower priorities.
- Processes are in place to monitor and consult with stakeholders on the relevance and practical utility of existing statistics (with regard to scope, level of detail, cost, etc.) according to current and emerging user needs.

Requirement 14.3: Statistics based on new and existing data sources are being developed in response to society's emerging information needs.

- An innovation laboratory is established to consider and experiment with new data sources to meet emerging information needs.
- Cooperation with the scientific community and owners or holders of new data sources is established to experiment with and pioneer the use of these data sources.

- Possibilities of exploiting new data sources are regularly discussed by management.

Requirement 14.4: User satisfaction is regularly measured and systematically followed up.

- User satisfaction surveys and user studies are regularly carried out and analysed.
- Improvement actions arising from the user satisfaction surveys and user studies are identified and implemented.
- User satisfaction surveys include questions on the opinions of users about metadata availability.
- Measures to assess the satisfaction of main users with particular products are in place (e.g., specific user-satisfaction surveys and indicators, including timeliness, etc., at the product level).

*Principle 15: Assuring accuracy and reliability*

Requirement 15.1: Source data, integrated data, intermediate results and statistical outputs are regularly assessed and validated.

- Systems for assessing and validating source data, integrated data, intermediate results and statistical outputs are developed and managed.
- Data are systematically checked and compared with data from other sources and over time.
- Results of statistics are compared with other existing information in order to ensure validity.

Requirement 15.2: Sampling errors are measured, evaluated and documented. Non-sampling errors are described and, when possible, estimated.

- Procedures and guidelines are available on how to measure and manage (e.g., reduce or balance) errors.
- Sources of possible sampling errors are identified and described.
- Sampling errors are measured and evaluated.
- Non-sampling errors (errors from all sources, such as response errors, coverage errors, errors linked to measurements, processing and analyses, etc.) are identified, described and evaluated.
- Errors are analysed to identify improvement measures.
- Information about the sampling and non-sampling errors is made available to users as part of the metadata.

Requirement 15.3: Studies and analyses of revisions are carried out and used to improve data sources, statistical processes and outputs.

- Preliminary and revised data and statistics are clearly identified.
- Explanations about the timing, reasons for and the nature of revisions are made available.
- The revision policy follows standard and transparent procedures.
- Information on the size and direction of revisions for key indicators is used to improve the statistical processes.
- Information on the size and direction of revisions for key indicators is provided and made public.

*Principle 16: Assuring timeliness and punctuality*

Requirement 16.1: The timeliness of the statistical agency's statistics comply with international standards or other relevant timeliness targets.

- The timeliness of statistical agency's statistics complies with the dissemination standards of international organizations such as IMF or other relevant timeliness targets (e.g., requirements for the 2030 Agenda for Sustainable Development).
- Divergences from international timeliness targets are monitored and, if the targets are not met, actions are taken to ensure compliance with them.
- The overall trade-offs between timeliness and other dimensions of quality (e.g., accuracy, cost and respondent burden) are given consideration when setting targets.

Requirement 16.2: The relationship with data providers is managed with regard to timeliness and punctuality needs.

- Agreements are in place with data providers on the planned delivery dates and delivery format.
- Procedures are in place to ensure the effective and timely flow of data from providers to statistical agencies.
- Follow-up procedures are in place to ensure the timely receipt of data from providers.

Requirement 16.3: Preliminary results can be released when their accuracy and reliability is acceptable.

- The possibility and necessity of releasing preliminary data for key statistics is evaluated, while also considering data accuracy and reliability.
- When preliminary statistics are released, they are clearly identified as such.
- Users are provided with appropriate information on the quality of the preliminary statistics.
- Preliminary results are revised according to the established revision policy.
- Final results are clearly distinguished from preliminary results.

Requirement 16.4: Punctuality is measured and monitored according to planned release dates, such as those set in a release calendar.

- Punctuality or the rate of punctuality (i.e., rate of statistics published on time) is measured according to the release calendar. The finalization of the release calendar should occur at least 3 months in advance of the publication of the relevant statistics.
- Information on the punctuality of the released statistics is discussed by management and made available to users.

*Principle 17: Assuring accessibility and clarity*

Requirement 17.1: Statistics are presented in a form that facilitates proper interpretation and meaningful comparisons.

- Statistics are presented in a clear and understandable manner.
- Guidelines that describe the appropriate content and preferred formats and style (layout and clarity of text, tables and charts) of an agency's outputs are available to authors of statistical publications and databases.

- Published statistics are open for free use and redissemination, provided that reference is made to the responsible agency.
- Staff training and development programmes are in place with regard to writing about statistics (for press releases, publication highlights or other explanatory texts).
- Up-to-date methodological documents (on concepts, scope, classifications, basis of recording, data sources, compilation methods and statistical techniques), as well as quality reports and the work programme of the statistical agency, are made available to the public.
- Explanatory texts accompanying the statistics are reviewed for clarity and readability.
- Meaningful comparisons are included in the publications when appropriate.
- Preliminary and revised data are identified and explained in published statistics.
- Metadata needed to understand and use the statistics are published together with the statistics.
- A policy for archiving published statistics is in place.

Requirement 17.2: A data dissemination strategy and policy exists and is made public.

- The public is made aware that custom-designed outputs, statistics not routinely disseminated and longer time series can be provided on request when feasible, and it is instructed on how the data can be ordered. These outputs are made public if possible.
- Catalogues of publications and other services are made available to users.
- While official statistics are normally free and accessible for everyone, statistics that need to be produced on request might have a cost corresponding to the extra work they require. The pricing of special requests is fully transparent.
- A strategy has been developed and agreed upon with stakeholders for the release of anonymized data and microdata.

Requirement 17.3: Modern information and communication technology is used for facilitating easy access to statistics.

- Statistics are disseminated in various ways suitable for all users, with the agency's website providing a central entry point.
- Users are able to extract data from statistical databases through public interfaces in the most appropriate and common formats (xlsx, csv, html, etc.).
- Statistical data can be accessed through an application programming interface.
- Statistics are disseminated in ways that facilitate redissemination by the media.
- The statistical agency consults users on a regular basis to discover the formats of dissemination they most prefer.
- Agreements with key users are established for the efficient and regular transmission of statistics and data.
- Technical solutions for access to anonymized data are available.
- Explicit consideration has been given to trade-offs between accessibility and confidentiality (i.e., level of detail in tables).

Requirement 17.4: Access to microdata is allowed for research purposes, subject to specific rules and protocols on statistical confidentiality that are posted on the statistical agency's website.

- The statistical agency controls or monitors the access of researchers to microdata by providing the microdata in a secure environment.
- Researchers are regularly consulted about the effectiveness of the microdata access arrangements.
- Remote access facilities are available for accessing microdata, with appropriate controls.

Requirement 17.5: Mechanisms are in place to promote statistical literacy.

- The statistical agencies have a strategy to manage media relationships and maintain regular contact with the media.
- The statistical agencies arrange regular training and outreach for journalists.
- The statistical agencies arrange training for students on how to use statistics.
- The publication of articles on statistical issues, and how statistics should be used properly, is encouraged.

Requirement 17.6: The statistical agencies have a dedicated focal point that provides support and responds to inquiries from users in a timely manner.

- Well-known user support services are available to give prompt assistance to users to help them access and interpret the data.
- User support services are appropriately staffed to support a wide range of users.

Requirement 17.7: Users are kept informed about the quality of statistical outputs.

- Standards for quality reports, harmonized for the NSO and adjusted as appropriate for the NSS, and tailored for different users' needs, are defined.
- Published statistics are accompanied by standard quality reports, including information on the periodicity of the statistics, data sources, production methods and quality (i.e., accuracy and reliability, timeliness and punctuality, coherence and comparability, accessibility and clarity).
- Results from quality assessments or reviews are made public.

*Principle 18: Assuring coherence and comparability*

Requirement 18.1: International, regional and national standards are used with regard to definitions, units, variables and classifications.

- Statistical agencies promote the adoption of national, regional or international statistical standards.
- Guidelines, a common repository of statistical concepts, definitions of units and variables, and classifications and other mechanisms exist.
- Compliance with international, regional or national standards for statistical production is periodically assessed. Any deviations from these standards are identified and included in the publicly available metadata, along with reasons for such deviations.

Requirement 18.2: Procedures or guidelines are in place to ensure and monitor internal, intrasectoral and cross-sectoral coherence and consistency.

- Statistics derived from different sources or with different periodicities (e.g., monthly, quarterly, yearly) are compared and any differences are explained and reconciled, as appropriate.
- Cooperation and the exchange of knowledge among individual statistical programmes and domains is promoted.
- Process-specific procedures and guidelines are available to ensure that outputs are internally coherent.
- Before new statistics or statistical programmes are launched, the conceptual and methodological relationship with existing statistics is analysed.
- Statistical outputs are compared with results of other statistical or administrative sources that provide the same or similar information on the same subject matter, and divergences are identified and explained to users.
- Internal procedures or guidelines are developed in order to ensure and monitor internal coherence and consistency.
- Procedures and guidelines are developed in order to ensure that results from different sources can be combined. Compliance is periodically assessed.

Requirement 18.3: Statistics are kept comparable over a reasonable period of time and between geographical areas.

- Changes in methods of data compilation are clearly identified, described and analysed to facilitate the interpretation of the results.
- Quality reporting includes a section on the assessment of internal consistency and comparability over time and with related statistics.
- Breaks in a series are explained and the methods for ensuring reconciliation over a period of time are made publicly available.
- Effects of changes in methodologies on final estimates are assessed and appropriate information is provided to users.
- Significant changes in the society and phenomena to be measured are reflected by appropriate changes to concepts, classifications, definitions and target populations.
- Differences within geographical areas or at the country level due to different concepts or methodologies are explained.

#### *Principle 19: Managing metadata*

Requirement 19.1: The metadata management system of the statistical agency is well defined and documented.

- A strategy, guidelines and procedures are in place for metadata management and dissemination.
- Metadata management is recognized as the responsibility of all staff.

Requirement 19.2: Metadata are documented, archived and disseminated according to internationally accepted standards.

- International, regional, national or internal standards are used for metadata documentation, management and archiving.
- Procedures are in place to ensure that metadata are documented according to standardized metadata systems, and are regularly updated.

- Metadata are made available at the same time as the data and statistics to which they pertain.
- The dissemination of metadata is tailored to different needs, such as those of producers and users of statistics.
- A systematic way to archive metadata is available that also ensures that the metadata are accessible for reuse in the future.
- A glossary of statistical concepts is publicly available.

Requirement 19.3: Staff training and development programmes are in place on meta-data management and related information and documentation systems.

- Process managers are trained to properly document the data and describe the relevant processes.
- Statistical agency staff participate in international metadata forums.