ANALYSIS AND ANALYTICAL FRAMEWORKS

Analysis and Analytical Frameworks

Chapter 10

10.1 Introduction

10.1.1 What is analysis?

In general terms, **data analysis** is the process of developing answers to questions through the examination of data. The basic steps in analysis consist of identifying issues, determining the availability of suitable data, deciding which methods are appropriate for answering the questions of interest, applying the methods and evaluating, summarizing and communicating the results.

This chapter refers to the data analysis conducted by a national statistical office (NSO) immediately prior to, and/or possibly following, the dissemination of statistical outputs based on the data. It is distinct from **policy analysis** conducted by users. Where the context is clear, it is referred to as simply analysis, as in the Generic Statistical Business Process Model (GSBPM).

More specifically, according to the GSBPM (see *Chapter 6.3.1 — Administrative structure and finance of the national statistical office* – the GSBPM and *Chapter 15.4.3 — Generic Statistical Business Process Model (GSBPM)*) the analysis phase of a statistical process includes preparing statistical content (including commentary, technical notes, etc.), and ensuring outputs are 'fit for purpose' prior to dissemination to users. The preparation of maps, GIS outputs and geostatistical services may be included to maximise the value of the statistical information and capacity to analyse it. This phase also includes the sub-processes and activities that enable statistical analysts to understand the data and the statistics produced.

10.1.2 Why a national statistical office performs analysis

The primary function of an NSO is to disseminate statistical information (comprising data and explanatory notes) for the benefit of users. In the process of using this information, users, especially the more sophisticated users, may do a great deal of analysis. However, although, in these broad terms, the NSO produces and disseminates data, and the users analyse data, **the NSO itself should undertake a significant amount of statistical analysis** in order to better understand the quality of the data and the data production processes. More specifically, the reasons for data analysis are as follows:

User perspective

By analysing the data, the NSO puts itself in the position of a user. It becomes a surrogate user. It comes to understand more about how users may view the data. It finds the 'stories' in the data, and it may find errors that have previously escaped notice.

Data coverage

The NSO gets a better feel for the coverage and content of the data, and the limitations of the data in these respects.

Data accuracy

The NSO gets a better understanding of the accuracy and reliability of the data and the limitations of the data in these respects.

Data consistency

The NSO learns more about the internal coherence (consistency) of the data, and the coherence of the data with respect to other datasets, i.e., the ease with which they can be jointly understood and analysed.

Process limitations

The NSO is better positioned to identify the limitations of the process by which the data are generated and how the process could be improved.

Data confidentiality

The NSO must assure itself that confidentiality is preserved when the data are disseminated (as discussed in *Chapter 12.8.5 — Confidentiality and disclosure control*).

Data adjustments

The NSO may identify seasonal components of sub-annual data and disseminate seasonally adjusted data when appropriate as discussed in *Chapter 12.8.4 — Seasonal adjustment and time series analysis*.

Data commentary

Finally, the NSO is in a better position to write the commentary and/or explanatory notes that may accompany data when they are disseminated.

In summary, there are considerable benefits to an NSO in analysing data before their dissemination.

10.1.3 What is an analytical framework?

Some users may be interested in a single dataset, for example, a dataset containing the consumer price index. However, many are interested in several datasets relevant to a particular topic or domain, say health inputs and outcomes. Typically, different datasets are produced by different statistical processes. For them to be coherent, i.e., easily analysed jointly, they need to have been produced using common standards for scope, definitions, classifications and units.

In some domains, for example, health, the relevant standards are brought together within a single analytical framework, for example, the System of Health Accounts (described in *Chapter 10.9 — Health accounts*). In some cases, for example, the System of National Accounts, the framework may span multiple domains.

An analytical framework, which may also be referred to as an integrated framework or integrating framework, may be summarised along the following lines.

- It is a model relevant to a particular statistical domain that defines the scope, definitions, classifications, units, and relationships between them, for that domain.

- It aims to guide and facilitate understanding and to help logical thinking systematically.

- It ensures that the data are structured in such a way that analysis has tangible outcomes, for example, to answer questions such as 'what are key priority needs?'

- Defining an analytical framework requires selection amongst the possible options. It means deciding what data items are most important and informative, therefore limiting the analysed information.

- Analysis conducted using a framework is systematic, transparent, and with known coverage. It reduces the possible impacts of selection and procedural biases in the sense that multiple analysts are obliged to use the same concepts, definitions and classifications.

- It provides a basis for review of data outputs. For example, supply-use tables may be used to check consistency and completeness of data being provided to the national accounts.

  In the specific context of an NSO, an analytical framework is a model relating all the units, concepts, data items and classifications pertinent to a particular topic or domain. It enables data originating from different sources (surveys, censuses, administrative records, etc.) to be combined and analysed consistently.

Use of an analytical framework, wherever available, is highly recommended.

10.2 Supplementing data with analysis

10.2.1 Introduction

A **fact** is something consistent with objective reality, or that can be proven with evidence. **Dictionaries** define a fact as something that can be shown to be true, exist, or have happened. Therefore, the usual test for a statement of fact is verifiability, whether it can be demonstrated to correspond to experience. Given that official statistics are the products of processes that incorporate objective, scientific methods, they can be used as a basis for fact verification.

Even though official statistics bring awareness to particular issues and are a basis for fact verification, it must be noted that facts, for the most part, are still subject to interpretation. A user of statistical data analyses them and interprets their meaning within his/her own particular context. It is generally agreed that an NSO should comment on its most important statistical outputs and use its detailed knowledge based on access to the microdata to comment on impressions created by them, particularly if those impressions are liable to be wrong. However, analyses provided by an NSO should avoid policy and political interferences and comments. In General, an NSO would restrict itself to comment on statistical correlations between data sets and not interfere with non-statistical causality analyses. Analysis performed by the NSO should be an integral part of the production process, along with quality management. However, in the end, only a fraction of this analysis will supplement the dissemination of the results of official statistics. Disseminated analysis results should refer to ways of looking at and talking about data without imposing definitive conclusions about what the data mean. This includes providing interesting breakdowns, contextual information, explanatory notes and commentaries to accompany disseminated data, thereby giving additional value to users.

- *Walter J. Rademacher – The future role of official statistics* (🔗).
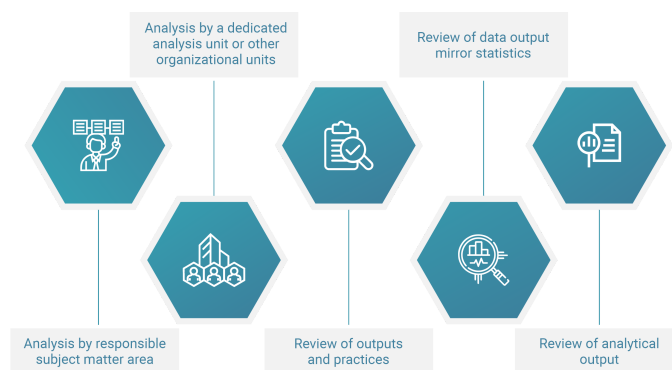
10.2.2 Analytical functions and outputs

Analytical results underscore the usefulness of statistical outputs by shedding light on relevant issues. Statistical outputs often depend on analytical output as a major component because, for confidentiality reasons, it is not possible to release the underlying microdata to the public. Data analysis also plays a key role in data quality assessment by pointing to data quality problems. Analysis can thus be a trigger for future improvements in the statistical production process.

Data analysis involves summarising the data and ensuring that it provides clear answers to the questions that initiated the statistical process. Often, it consists of analysing tables and calculating summary measures, such as frequency distributions, percentages, means and ranges. For sample surveys, it includes a description of the observed units, a selection of statistical

outputs (tables, charts, measures of spread, models, etc.), and/or a description of the population and tests of hypotheses about it, in which case the sample design must be properly accounted for.

In addition to analysing the statistical data from a user perspective, NSOs should also continuously monitor and analyse the underlying statistical processes to ensure their stability and enable continuous improvement of their quality, as was discussed in *Chapter 7.2 — Measuring and analysing user satisfaction and needs*. Analysis may be undertaken at various stages in the statistical process, and by various organizational units, depending upon the overall organizational structure of the NSO, as further discussed in the following sections.

Analysis by a dedicated analysis unit or other organizational units · *Review of data output mirror statistics* · *Analysis by responsible subject matter area* · *Review of outputs and practices* · *Review of analytical output*

Analysis by responsible subject matter area

The subject matter specialist may perform analysis during the processing of statistical data and prepare the statistics for dissemination. The analysis may begin with exploratory data analysis and macro-editing methods described in *Chapter 9.2.6 — Processing survey*. This form of analysis, which may be termed **preliminary analysis**, involves summarising the raw data and investigating any data discrepancies. All preliminary outputs should be analysed in this way, to determine data consistency and to direct further analysis.

> The preliminary analysis includes macro editing, drill-downs to unit data, tabulation, exception reporting and assessment of results against results from previous periods and related data sources.

During this phase, subject matter experts also perform the additional analysis required to complete the quality reports. This type of analysis provides a better understanding of the properties of a dataset and the underlying phenomena. It also helps identify potential errors in the processing, helps improve weights for sample surveys and identifies areas for further improvement, for example, parts of a questionnaire that may benefit from wording improvements.

The key elements of analysis are performed just before dissemination, while the data are being tabulated and prepared for release. The analysis may include preparing a summary of key findings of the release, preparing the explanatory notes that provide detailed information about properties of the dataset, and preparation of charts to accompany the release. The analysis should try to mimic the users of data, and, by replicating the procedures that they may use, try to further check the consistency of released figures. Commonly, comparisons are made with the results with previously released statistics and with other data sources. Every effort should be made to reflect users' interests and perform additional checks of data that may be of particular interest to them.

Even though these types of analysis are usually done by the subject matter specialist, there are NSOs where tabulation is done by the IT department and charts and commentaries are produced by the dissemination department. For sample surveys, some analyses such as a non-response analysis (see *Chapter 9.2.7 — Respondent relations and communications* for more details) may be performed either by the subject matter area or the organizational unit responsible for processing, or other specialised units, such as methodology. Subject matter experts may also perform time series analysis and analysis for confidentiality and disclosure control (as described later in this chapter). These types of analysis may also be performed by methodology experts or jointly with them.

Analysis by a dedicated analysis unit or other organizational units

This section describes options for organizing the expert knowledge (such as sampling techniques, analysis methods, IT and dissemination options) required for statistical analysis within an NSO. As this knowledge is needed across the full

range of statistical processes, staff with such knowledge are usually located in a dedicated analysis unit, particularly in larger and well developed NSOs. In many smaller NSOs, this may not be possible.

Depending on the type of the statistical process, additional analyses may also be performed by other experts in specialised units. For example, an expert in the statistical business register unit may analyse the classifications assigned to reporting units and perform coverage tests in order to determine the representativeness of responses within subgroups of the population as discussed in *Chapter 12.4 — Frames for informal sector surveys*. A sample design expert may analyse weights to perform nonresponse adjustments and improve estimates for sample surveys, as discussed in *Chapter 9.2 — Sample surveys and censuses*. Experts in an analysis unit may perform time series analysis and seasonal adjustment. An IT or data management expert may apply disclosure control measures discussed in *Chapter 12.8.5 — Confidentiality and disclosure control*. Some larger offices may also have a dedicated experimental statistics unit that may deal with innovative sources and Big Data issues. This unit often requires different skillsets, combining statistical knowledge with extensive technological skills, as discussed in *Chapter 9.2.9 — Survey staff training and expertise*.

Regardless of the statistical process, further analysis of the coherence and consistency of the statistical output is performed by the unit that specialises in the corresponding analytical framework (if there is one). The most notable example is the national accounts unit, where data from a wide range of sources are brought together and analysed side by side as further discussed in *Chapter 10.4 — National accounts*).

- *Eurostat, Handbook on improving quality by analysis of process variables* (🔗).

Review of outputs and practices

In their quest for continuous improvement, an NSO should be open to a broad review of its outputs and evaluate its practices. An internal review of a publication before release is a common practice. It engages the senior officials of the organization and fosters cross-subject review and criticism/critiquing. For example, a release of statistics on employment and unemployment may be effectively reviewed by those responsible for industry and trade statistics or by national accountants. This type of review is usually performed regularly. It is particularly important if statistics being released tend to attract a significant number of questions (or frequently repeating questions) after the release.

A more formal process should be reserved for larger analysis efforts, such as analyses associated with a new survey of family incomes and expenditure, a new economic census, or a new population census. In addition to engaging multiple experts and units internally, it is beneficial to persuade members of the academic community to take part in a review process. The goal of the review is to judge whether the statements made are fully supported by evidence; whether the most important inferences based on the new data available have been taken into account; and whether the methods used stand up to close scrutiny in the face of current knowledge. Additionally, publications are also scrutinized as part of periodic external reviews that may result in recommendations that can vastly improve the quality of future statistical outputs. In all cases, such reviews are likely to involve significant analysis of statistical output and metadata. Such reviews may be performed as national, regional and/or international exercises. They may focus on the entire NSS, or a particular subject matter area. Regional or international reviews usually check the application of international standards, such as the *Global review of the implementation of the Fundamental principles of official statistics* (🔗). The scope of a national review may vary according to the structure of the NSS. In a centralised system, a review may check the quality of outputs, while in a decentralised system, it may check both the quality of outputs and the application of principles. (More details are provided in *Chapter 8 - Quality Management*).

Review of data output – mirror statistics

Mirror statistics refer to the situation where flow statistics between two countries are compared. For example, the exports of country A to country B (measured by county A) are compared with the imports of country B from country A (measured by country B). The aim is to detect causes of bilateral asymmetries. Apart from detecting asymmetries, the mirror statistics methodology may be used to derive estimates or impute a missing variable of flow statistics for a country using data from the partner country. Mirror statistics are commonly used for foreign trade statistics, and migration statistics, where the mirror data flows from partner countries can be used to assess the quality of the data and eventually compile estimates for the country.

Even though mirror statistics are useful in filling data gaps, their prime use should be for review purposes. The most common process of mirror statistics review is performed when NSOs of two or more countries agree to compare the results and the underlying microdata to improve the quality, for example through subsequent improvements in registration

and classification procedures.

- *UNECE - Statistics on International Migration: A Practical Guide for Countries of Eastern Europe and Central Asia* (🔗);

- *UNESCAP - Asymmetries in International Merchandise Trade Statistics: A case study of selected countries in Asia-Pacific* (🔗).

Review of analytical output

Review of analytical output is usually performed by external reviewers or through a peer-review process. It consists of checking the processes and procedures that accompany the statistical releases. GSBPM provides a framework that can be used to systematically review the stages of production. Statistical areas are usually reviewed using an audit-like approach, as each step should be well documented to enable the replication of results. There are also examples where reviews on statistical processes and products are conducted by function such as dissemination, sampling or the use of statistical registers, and not by statistical domain. Further, systematic reviews of whole statistical systems are occasionally commissioned to assess the effectiveness of the statistical system and its governance models.

- *Eurostat - Review of national supply, use and input-output tables compilation* (🔗);

- *Professor Sir Charles Bean: Independent Review of UK Economic Statistics* (🔗);

- *ONS - Review of international best practice in the production of productivity statistics* (🔗).

10.3 Methods and systems of analysis

10.3.1 Methods of analysis

Regression and correlation

> The most commonly used techniques for investigating the relationship between two quantitative variables are correlation and linear regression.

Correlation quantifies the strength of the linear relationship between a pair of variables, whereas regression expresses the relationship in the form of an equation. Both methods are used in sampling and estimation procedures for sample surveys. They are also used in analysis, particularly to determine the relevance of a research hypothesis. In statistical analysis, correlation can be used to confirm the relation between variables - for example, the turnover of retail trade and the collected value-added tax in the same period are expected to positively correlate.

To determine a regression equation, the first step is to determine the general pattern that the data fits. This includes making a scatter plot and then trying out various equations to find the best fit. It is not always straightforward to select the appropriate regression equation. Experience helps.

Seasonal adjustment and time series

> Seasonal adjustment is a method of removing short-time periodic changes based on a basic time series decomposition.

It is widely used in official statistics for removing the seasonal component of a sub-annual (usually monthly or quarterly) time series. In essence, a series is split into four components:

- Seasonal component;

- Calendar component;

- Irregular component; and

- Smoothed, seasonally adjusted trend component.

Such decomposition creates a seasonally and calendar adjusted series by the exclusion of the seasonal and calendar components from the original series.

The objective of seasonal adjustment is to facilitate time series analysis, i.e., period to period comparisons in a time series, and detection of the underlying trend, which may otherwise be obscured by seasonal and calendar effects. It involves the removal of seasonal and calendar variations in the original series.

Seasonal adjustment is invariably preceded by pre-treatment, including detection and correction of outliers. The next step is the calendar adjustment, i.e., the removal of trading day variations and moving holiday effects. Then, in some cases, the original series may be differenced, to obtain stationarity, which is a property of a time series required by seasonal adjustment algorithms for them to work properly. The various choices made in setting up a seasonal adjustment (including pre-treatment and calendar adjustment) plan for a particular series are collectively referred to as model selection.

The use of seasonally adjusted time series is becoming the norm in official statistics as users expect the data (particularly short-term data) to be available in a form that is not influenced by seasonal and calendar components. Given that pre-treatment and seasonal adjustment algorithms are complex and computationally intensive, they are invariably implemented using a seasonal adjustment system. There are multiple seasonal adjustment systems available, of which the most commonly used are listed below and further described in *Chapter 15.7 — Specialist statistical processing/analytical software*:

- New Capabilities and Methods of the X-12-ARIMA Seasonal Adjustment Program (🔗).

- TRAMO-SEATS, Department of Statistics, National Bank of Spain (🔗).

- X-13 ARIMA-SEATS system combines X-12 ARIMA and TRAMO-SEATS, developed and supported by the US Census Bureau (🔗).

- Jdemetra+, also combines X-12 ARIMA and TRAMO-SEATS, developed by the Department of Statistics of the National Bank of Belgium for the ESS Seasonal Adjustment Group (🔗).

It is recommended that the seasonal adjustment method, and at least a general procedure for determining the adjustment parameters, are adopted and used consistently within the NSO, and ideally across the entire NSS. Having different seasonal adjustment methods may lead to different seasonally adjusted series of similar initial data sets.

- *Eurostat - Handbook on Seasonal Adjustment, 2018 edition* (🔗).

- *Eurostat - ESS guidelines on temporal disaggregation, benchmarking and reconciliation, 2018 edition* (🔗).

- ABS - Time Series Analysis: Seasonal Adjustment Method (🔗).

Confidentiality rules and disclosure control

Confidentiality is a fundamental principle of statistics discussed in detail in *Chapter 3.2.6 — Principle 6 - Confidentiality*. Producers of official statistics must guarantee that individual data collected for statistical compilation, whether they refer to natural or legal persons, are to be strictly confidential and used exclusively for statistical purposes. This section discusses the confidentiality rules that are implemented to ensure the observance of this principle and methods of disclosure control.

The modern approaches to statistical confidentiality distinguishes direct and indirect identification. Direct identification means identification of the respondent from one or a combination of their identifiers (name, address, identification number…). Indirect identification means inferring a respondent's identity by combining variables or characteristics such as location combined with age, gender and education. These variables may be found in one data source or in different sources and eventually combined. According to the principle of confidentiality, both direct and indirect identification of a respondent should be avoided. However, access to microdata without identifier but that in some cases could allow indirect identification may be granted for scientific purposes under specific terms and conditions, as further discussed in *Chapter 4.5.5 — User access to confidential data for their own statistical purposes* and in *Chapter 11.5.3 — Microdata*.

- **Confidentiality rules for tabular data**

  Confidentiality rules can be divided into two approaches: active and passive. Passive confidentialising (or confidentialisation) is traditionally limited to international trade in goods statistics, where it is applied only if the dominant enterprise in a tabulation cell (i.e., the enterprise with the largest value) specifically asks for it. Active confidentialising per defined confidentiality rules, is applied in almost all other statistical areas.

NSOs throughout the world most commonly apply the following three confidentiality rules for protecting tabular data:

– **Number criterion**, i.e., applying a minimum requirement of, e.g., three observations in a table cell, for the relevant data in the cell to be published.

– **Dominance criterion** for economic variables (e.g., sales or value-added) is applied. This means that if the largest or two largest businesses together account for a dominant share (e.g., 85%) of the value of a given table cell, confidentialising is applied.

– **Secondary confidentialising** (or **residual disclosure**); after sensitive cells have been identified and their values suppressed there is still the possibility that the suppressed values can be identified from the values in cells that have not been suppressed. This is referred to as residual disclosure. The simplest example is a one-dimensional table of counts or qualities in which the value of one cell has been suppressed, but the total of all cells is published. In this case, the suppressed cell's value can readily be deduced by subtracting the values of all other cells from the total. All output tables have to be checked for residual disclosure and other cells suppressed to ensure that it does not occur. The overall number of cells suppressed should be minimised to ensure that as many data as possible are published.

• **Statistical disclosure control**

Statistical disclosure control methods are processes and procedures used to reduce the risk that statistical units are identified when the statistical data are being published. These include:

– **Tabular data protection** for aggregate information on respondents presented in tables (using suppression, rounding and interval publication);

– **Microdata protection** for information on statistical units (using local suppression, sampling, global recoding, top and bottom coding, rounding, rank swapping and micro aggregation).

If the value of a sensitive cell is published, disclosure is said to have occurred, violating the requirement that no confidential data be revealed. Thus, ensuring that there are no sensitive cells in output tables is one requirement for preserving confidentiality. Typically, the value of a sensitive cell is suppressed in the output table, meaning that, instead of being published, it is replaced by an asterisk or other special symbol with a note indicating the reason, i.e., preservation of confidentiality. Automated systems for disclosure control can be integrated into the tabulation solutions, thus providing confidentiality on the fly for any query that the users may request.

Software solutions that automate statistical disclosure control are available on the market, as discussed in *Chapter 12.8.5 — Confidentiality and disclosure control*.

• *Statistics Denmark's data confidentiality policy* (🔗)

• *UNECE: Managing Statistical Confidentiality & Microdata Access Principles and Guidelines of Good Practice* (🔗).

10.3.2 Systems for analysis

Commercial and free open-source systems for data analysis

It is safe to assume that almost every producer of official statistics uses one or more commercial or open-source software packages in the production of statistical data, including for data analysis. While NSOs have used some packages (such as SAS) since the early mainframe days, others such as open-source R have gained popularity more recently.

The purpose of this section is not to recommend the use of a particular software system for analysis, but rather to list possible options and to provide guidance on possible criteria for selection. Below are links to each of the most commonly used statistical software packages. More options are provided in *Chapter 15.6 — Basic IT infrastructure needs and skill requirements* and *Chapter 15.7 — Specialist statistical processing/analytical software*.

SAS is a software suite that can discover, alter, manage and retrieve data from various sources and perform statistical analysis on them.

SPSS Statistics is a statistical software platform from IBM by means of which a user can analyse and better understand its data and solve complex business and research problems.

Stata is statistical software that enables users to analyse, manage, and produce graphical visualizations of data.

R (Project for Statistical Computing) is a language and environment for statistical computing and graphics.

Minitab is a general-purpose statistical software package used as a primary tool for analysing research data.

Selection of the appropriate system for data analysis is often path-dependent. If a particular system is already being used somewhere else in the NSO, it may be difficult and time-consuming to use another system as processes, procedures and customisation are already in place.

Licencing costs are often a limiting factor. Implementing an advanced enterprise-grade statistical system may be too expensive. Availability of local knowledge and training may also nudge an NSO towards a specific solution. Statistical procedures are prewritten in some systems, and recently NSOs have started promoting the sharing of procedures and code, mostly based on open-source platforms (discussed in detail in *Chapter 15.2.9 — Open-source software*).

Systems for seasonal adjustment

There are multiple seasonal adjustment packages available of which the most commonly used are listed below and further described in *Chapter 15.7 — Specialist statistical processing/analytical software*.

- X-12 ARIMA, US Census Bureau (🔗).

- TRAMO-SEATS, Department of Statistics, National Bank of Spain (🔗).

- X-13 ARIMA-SEATS system combines X-12 ARIMA and TRAMO-SEATS, developed and supported by the US Census Bureau (🔗).

- Jdemetra+, also combines X-12 ARIMA and TRAMO-SEATS, developed by the Department of Statistics of the National Bank of Belgium for the ESS Seasonal Adjustment Group (🔗).

Systems for confidentiality and disclosure control

As output tables are typically voluminous and may be inter-related, identifying and preventing disclosure is not a process that can readily be done manually. Thus, an NSO should either acquire a confidentiality checking and disclosure control tool or develop a tool of its own. The acquisition is recommended to save development costs. However, as confidentiality checking, and disclosure control tools are not readily available commercially (there being very little demand for them outside the realm of official statistics) acquisition is likely to be from another NSO. Two well-known examples are as follows and further described in *Chapter 12.8.5 — Confidentiality and disclosure control*:

- **ARGUS, Statistics Netherlands**: as described in *ARGUS Users' Manual Version 3.3* (🔗), the purpose of Γ-ARGUS is to protect tables against the risk of disclosure. This is achieved by modifying the tables so that they contain less detailed information. A twin application, μ-ARGUS protects microdata files. Both applications have been rewritten in open source (🔗).

- **G-Confid, Statistics Canada**: as described in G-Confid: Turning the tables on disclosure risk, 20 (🔗), G-Confid is a generalized system that can deal with potentially voluminous multi-dimensional tables and that can incorporate new approaches.

10.4 National accounts

10.4.1 System of National Accounts (SNA)

The *System of National Accounts* (SNA) is the internationally agreed standard set of recommendations on how to compile measures of economic activity. The central role of national accounts (NA) based on the SNA is critical. There is no other such widely accepted and powerful integrating tool for social and demographic statistics. Its use in identifying weaknesses and gaps in basic statistics is clear. Moreover, its role extends beyond the production of data on the condition of the economy at regular intervals. Part and parcel of estimating the broad macroeconomic aggregates is the related task of taking an inventory of, and influencing, the corresponding incoming economic data.

> The SNA describes a coherent, consistent and integrated set of macroeconomic accounts in the context of a set of internationally agreed concepts, definitions, classifications and accounting rules.

In addition, it provides an overview of economic processes, recording how production is distributed among consumers, businesses, government and foreign nations. It shows how income originating in production, modified by taxes and transfers, flows to these groups and how they allocate these flows to consumption, saving and investment. Consequently, the national accounts are one of the building blocks of macroeconomic statistics, forming a basis for economic analysis and policy formulation.

> As a conceptual framework, the SNA provides an overarching framework for standards in other economic statistics domains, facilitating the integration of these statistical systems to achieve consistency with the national accounts.

It does this by defining the basic elements of economic statistics such as definition of units; valuation principles; accounting rules; the production boundary; and the assets boundary etc. This approach means that data from many collections can be, and indeed are, utilized to populate the National Accounts in countries. Indeed, as the SNA is a conceptual standard (as opposed to a collections standard) data from numerous sources, including non-survey data sources, can be integrated into the accounts. As such, the National Accounts are well placed to take advantage of administrative data and other (including big) data sources.

The SNA is intended for use by all countries, having been designed to accommodate the needs of countries at different stages of economic development. Another strength is that the articulation of the SNA is sufficiently robust that a great deal of flexibility can be applied in its implementation while still retaining integrated, economically complete and internally consistent accounts.

> The SNA exhibits another form of flexibility by incorporating the concept of satellite accounts that are intended for special purposes without altering the SNA's globally accepted framework. Many NSOs use satellite accounts to provide alternative views of economic activity that their national users require. Examples are the Tourism Satellite Accounts (further discussed in *Chapter 10.8.1 — Concept, frameworks and guidelines*) and the Non-Profit Institution Satellite Accounts.

The international community is also taking advantage of this flexibility to build standards that link the traditional economic focus of the SNA to other related areas of policy need. An important example is the development of the System of Economic-Environmental Accounts (further discussed in *Chapter 10.6.1 — System of Environmental Economic Accounting*), an accounting framework that integrates economic and environmental data using concepts, definitions and classifications consistent with the SNA. Another example is the development of Labour Accounts that link the National Accounts to labour market outcomes (further discussed in *Chapter 10.8.1 — Concept, frameworks and guidelines*).

System of National Accounts 2008

The most recent version of the SNA is the *System of National Accounts 2008* (2008 SNA). It is the fifth version of the SNA, the first of which was published in 1953. The 2008 SNA does not include any fundamental or comprehensive changes that would impede a smooth transition from the use of the previous version, namely the 1993 SNA (discussed in the next subsection). Furthermore, consistency with related manuals, such as those on the balance of payments, government finance statistics and monetary and financial statistics, was an important consideration in the update.

The 2008 SNA starts with an introduction and an overview and then presents the accounting rules, the accounts and tables, and their integration. These subjects are the topics of Chapters 1-17. Chapters 18 to 29 elaborate on various aspects of the accounts provide details about their presentation and describe some possible extensions to improve the usefulness of the accounts for a wide range of purposes.

The European Union, has published the *European system of national and regional accounts (ESA) 2010* (🔗), which is a version of the 2008 SNA tailored to the EU's specific needs.

Countries sometimes publish the concepts, sources and methods they use in compiling their national accounts. These are invariably based on, but may not implement precisely, the SNA 2008 or earlier versions. An extract from such a publication is presented below. It contains a nice summary of what a user needs to know about the national accounts.

As detailed in the *Australian System of National Accounts Concepts, Sources and Methods 2015* (🔗), the Australian System of National Accounts (ASNA) is based on the international standard 2008 SNA and the BPM6. It provides a systematic statistical framework for summarising and analysing economic events, the wealth of an economy, and its components.

The principal economic events recorded in the national accounts are production, consumption, and accumulation of wealth. The national accounts also record the income generated by production, the distribution of income among the factors of production and the use of the income, either for consumption or acquisition of assets. Additionally, they record the value of the economy's stock of assets and liabilities, and the events, unrelated to production and consumption that bring about changes in the value of the wealth stock. Such events can include revaluations, write-offs, growth and depletion of natural assets, catastrophes, and transfers of natural assets to economic activity.

The national accounting framework comprises a set of accounts that are: balanced using the principles of double-entry accounting and fully integrated in that there is a balance between the value of assets and liabilities at the beginning of an accounting period, the transactions and other economic events that occur during the accounting period, and the closing values of assets and liabilities.

Accounts for the economy as a whole are supported by accounts for the various sectors of the economy, such as those relating to the government, households and corporate entities. The framework also embraces other, more detailed, accounts such as financial accounts and input and output (I-O) tables. It also provides for additional analyses through social accounting matrices and satellite accounts designed to reflect specific aspects of economic activity such as tourism, health and the environment. By applying suitable price measures, the national accounts can be presented in volume terms as well as in current prices. The national accounts' time series can also be adjusted to remove seasonal distortions and to disclose trends.

In general terms, the main purpose of the national accounts is to provide information that is useful in economic analysis and formulation of macroeconomic policy. The economic performance and behaviour of an economy as a whole can be monitored using information recorded in the national accounts. National accounts data can be used to identify causal relationships between macroeconomic variables and can be incorporated in economic models used to test hypotheses and make forecasts about future economic conditions. Using national accounts data, analysts can gauge the impact of government policies on sectors of the economy, and the impact of external factors such as changes in the international economy. Economic targets can be formulated in terms of major national accounting variables, which can also be used as benchmarks for other economic performance measures, such as tax revenue as a proportion of gross domestic product or government contribution to national saving. Provided that the national accounts are compiled according to international standards, they can be used to compare the performance of the economies of different nations.

In addition, the full range of information available from a comprehensive national accounting system can serve purposes well beyond immediate concerns of macroeconomic analysts. For example, national accounts information can be used to analyse income and wealth distribution, financial and other markets, resource allocation, the incidence of taxes and welfare payments, environmental issues, productivity, industry performance, etc.

Surveys and other statistical systems that employ the concepts in the national accounting framework produce information that is consistent with the national accounts and with other statistics that are based on the national accounts framework.

System of National Accounts 1993

The *System of National Accounts 1993* (1993 SNA) was the fourth version of the SNA, a significant update of the 1968 version. Many countries are still using the 1993 SNA.

10.4.2 Other related manuals and guidelines

The SNA is accompanied by numerous manuals and guidelines dealing with various aspects of its implementation and extension. The most important of these are presented below.

Quarterly National Accounts Manual, 2017 IMF

The *IMF Quarterly National Accounts Manual* (⧉) provides conceptual and practical guidance for compiling quarterly national accounts (QNA) statistics. It offers a comprehensive review of data sources, statistical methods, and compilation techniques to derive official estimates of quarterly GDP. The 2017 edition, which upgrades the first edition (⧉) published

in 2001, improves and expands the previous content based on recent methodological advances, best country practices, and suggestions from QNA compilers and experts.

The Manual provides an internationally accepted framework for producing QNA data. It is fully consistent with the 2008 SNA. Countries should consider the Manual a companion guide to the 2008 SNA regarding specific aspects of quarterly GDP compilation. The methodology and concepts described in the Manual are also consistent with those of other statistical manuals produced by the IMF Statistics Department, including the BPM6 (discussed below), the Government Finance Statistics Manual 2014 (⚭), and the *Monetary and Financial Statistics Manual and Compilation Guide* (⚭). The *2001 version of the Manual* (⚭) is still available for countries using the 1993 SNA.

Essential SNA: Building the Basics, 2014, Eurostat

The *Eurostat Essential SNA Handbook* (⚭) supports the successful implementation of the 2008 SNA, providing instruments to support analysis of basic data when preparing national accounts statistics for the first time or improving the existing situation. The 2014 handbook develops the work undertaken over the previous four years. It includes the most recent developments of the Inter-secretariat Working Group on National Accounts (ISWGNA) and its work on monitoring 2008 SNA implementation.

Handbook on Supply, Use and Input-Output Tables with Extensions and Application, 2018, UNSD

The *UNSD Handbook on Supply, Use and Input-Output Tables* (⚭) was updated to refer to the latest versions of the international standards, in particular, the 2008 SNA and the BPM6. It is one of a series of handbooks on national accounting (presented below in this subsection) that supports the 2008 SNA. Its objective is to provide step-by-step guidance for the compilation of supply and use tables (SUTs) and input-output tables (IOTs) and an overview of the possible extensions of SUTs and IOTs that increase their analytical usefulness. The *1999 Handbook of Input-Output Table Compilation and Analysis* (⚭) is still available for countries using 1993 SNA.

Handbook of National Accounting: Financial Production, Flows and Stocks in the System of National Accounts, 2014, UNSD

The *UNSD Handbook of National Accounting: Financial Production, Flows and Stocks in the System of National Accounts* (⚭) provides practical guidance on the calculation and allocation of the production of various types of financial services and issues related to the compilation of the financial account and balance sheets by institutional sector in the context of from-whom-to-whom relationships.

Satellite Account on Non-profit and Related Institutions and Volunteer Work, 2018, UNSD

The *UNSD Handbook on Satellite Account on Non-profit and Related Institutions and Volunteer Work* (⚭) is an update of the *Handbook on Non-Profit Institutions (NPIs) in the System of National Accounts (United Nations, 2003)* (⚭). It reflects the most recent revisions of the underlying international economic accounting standards (notably the 2008 SNA) and classifications (notably ISIC Rev. 4), and experiences and country practices in implementing the guidelines for NPI satellite accounts. The Handbook brings various efforts together to offer comprehensive methodological guidance for creating, in a manner that is compatible with the 2008 SNA, a coherent satellite account on what is called the 'third sector', or 'social economy sector' (abbreviated 'TSE sector') that embraces three components:

- NPIs that are not controlled by the government;
- certain related institutions that are not controlled by the government, including in-scope cooperatives, mutual societies, and social enterprises; and
- volunteer work.

Guidelines on Integrated Economic Statistics, 2013, UNSD

The *UNSD Guidelines on Integrated Economic Statistics* (⚭) provide practical guidance on advancing consistency, coherence and reconciliation of statistical information by applying the methodology of integrated economic statistics using the System of National Accounts 2008 as the overarching conceptual framework. The Guidelines also provide case studies and other practical material to share experiences in implementing an integrated statistical production approach in national statistical systems.

Handbook of National Accounting: Household Accounting Experience in Concepts and Compilation, Vol.1: Household Sector Accounts, 2000, UNSD

Volume 1 of the *UNSD Handbook of National Accounting: Household Accounting Experience in Concepts and Compilation* (🔗) focuses on household sector accounts and their possible extensions described in the 1993 SNA. (It is also useful for countries using 2008 SNA.) It describes the experiences of countries with regard to conceptual and compilation issues of the household sector and satellite accounting. It focuses on the concept of the informal sector, presents country and case studies on the compilation of household sector accounts, and describes the links of the household sector with other selected sectors.

Handbook of National Accounting: Household Accounting Experience in Concepts and Compilation, Vol.2: Household Satellite Extensions, 2000, UNSD

Volume 2 of the *UNSD Handbook of National Accounting: Household Accounting Experience in Concepts and Compilation* (🔗) focuses on household sector accounts and their possible extensions described in the 1993 SNA. (As for Volume 1, it is also useful for countries using 2008 SNA.) It describes the experiences of countries with regard to conceptual and compilation issues of the household sector and satellite accounting. It is primarily devoted to various types of household satellite accounting, including labour accounting and socio-economic accounting. It also describes various social indicators, problems in measuring them and potential data sources.

Handbook of National Accounting: Links between Business Accounting and National Accounting, 2000, UNSD

The *UNSD Handbook of National Accounting: Links between Business Accounting and National Accounting* (🔗) refers to SNA 1993 but is still applicable for countries using the 2008 SNA. It covers the conceptual and practical aspects of linking business accounts to national accounts through countries' experiences. It describes how to read corporations' financial statements, the similarities and differences between concepts in business accounts and economics, and the necessary adjustments to be made to business accounts to obtain national accounts for economic analysis. Its main target audience is staff responsible for the compilation of national accounts and survey specialists.

Handbook of National Accounting: Use of Macro Accounts in Policy Analysis, 2002, UNSD

The *UNSD Handbook of National Accounting: Use of Macro Accounts in Policy Analysis* (🔗) is about the interaction between the scope of macro accounting, the compilation of macro accounts, and analysis. Traditionally policy analysts use statistics to monitor developments and make decisions. This handbook emphasizes the role of macro accounting as an instrument rather than a dataset. The term 'macro accounts' refers to the feature of macro accounts to reconcile separate statistics into a coherent data set and offers macro accounts as an instrument to policy analysts.

Manual on regional accounts methods, 2013, Eurostat

Regional accounts are a regional specification of the national accounts. They play an important role in the formulation, implementation and evaluation of regional policies. In particular regional indicators resulting from the regional accounts are used for assessing regional disparities.

While Chapter 13 of ESA 2010 contains basic rules for regional accounts, this *Eurostat Manual on regional accounts methods* (🔗), provides detailed recommendations for their practical implementation in the Member States.

Measuring the Non-observed Economy – a Handbook, OECD, IMF, ILO and CIS Statistics

Complete coverage of economic production is a vital aspect of the quality of the national accounts. This exhaustiveness is hard to achieve because of the difficulties in accounting for certain types of productive activities. Activities that are missing from the basic data used to compile the national accounts because they are underground, illegal, informal, household production for own final use, or due to deficiencies in the basic data collection system are referred to as non-observed. They are said to comprise the non-observed economy (NOE), and including them in the national accounts is referred to as a measurement of the NOE.

Given the wide range of possible approaches to NOE measurement, there is a need to identify and promote international best practice. This is the aim of the *Handbook on Measuring the Non-observed Economy – a Handbook, OECD, IMF, ILO and CIS Statistics* (🔗). It presents a systematic strategy for achieving exhaustive estimates of gross domestic product consistent with international standards and, in particular, with the 1993 SNA.

10.4.3 Organizational arrangements

Location of national accountants

Given that compilation and management of the NA require very specialized skills and good liaison with key users, the location and training of the national accountants (i.e., those responsible for the national accounts) and their communications with staff in the relevant subject matter areas are vital factors.

In most countries, the unit responsible for the compilation of the national accounts (NA Unit) is contained within the NSO. This is the preferred arrangement as it makes it relatively easy for the NSO to ensure appropriate staff are recruited and trained, that they have easy access to the sources of data input to the NA and that they communicate effectively with the subject matter experts responsible for collecting these data (as further discussed in the next sub-section).

> In some countries, the NA Unit is in another producer of statistics within the NSS, often the Central/Reserve Bank, sometimes a research unit within the Ministry of Finance. Whilst this may have the merit of placing the NA Unit close to a major user, it is not a recommended practice.

More specifically, in conformity with UN Statistical Commission decision 51/108c, to comply with the Fundamental Principles of Official Statistics, national accountants should be independent of the users of these statistics such as the monetary authorities.

If the NA Unit is not within the NSO then, in its role as NSS coordinator, the NSO should have a memorandum of understanding (MOU), or equivalent, with the NA Unit. The MOU should cover:

- the data required by the NA Unit from the NSO;

- the training (if any) required by the NA Unit to be delivered by the NSO;

- the national accounting outputs to be produced and disseminated by the NA Unit;

- the schedule and draft agenda for regular and frequent meetings at working level to review the production and transfer of data as agreed and to discuss any forthcoming events or changes in circumstances that might require changes to procedures or lead to improvements in procedures.

- the schedule and draft agenda for regular six-monthly meetings at top management level to ensure that everything is taking place as planned, consider changes proposed at the working level that require top management authorisation, and respond to any concerns raised by top management.

Relationships with subject matter experts

As noted above, and for the following reasons, it is vital that the NA Unit and relevant subject matter experts have highly effective communications.

- First, the subject matter staff determine what data actually become available to the NA Unit for compiling the NA. In this sense, the NA Unit is a particularly important user, perhaps the most important user, for some subject matter areas. In some countries, the NA Unit itself is responsible for some direct data collection. This was more common in the past. It is not recommended because staff in subject matter and service areas are chosen for their skills in conducting surveys, whereas NA staff are not.

- Second, in compiling the accounts, the NA Unit staff have the opportunity to thoroughly assess the various incoming datasets, and their limitations, in terms of coverage, content, accuracy, timeliness, and coherence, and to feedback their observations and recommendations for improvements to the subject matter experts.

Relationships should be built on good communications between subject matter area and NA unit staff, and on common strategies and objectives at the senior management level. Communications can take the form of regular and frequent meetings at working level and regular, but less frequent, meetings at the senior management level. NSO top management should set priorities and stay informed through regular meetings of the chief statistician and immediate deputies with the NA Unit head. This is especially important where the NA Unit and subject matter areas are in different agencies or report to different deputies, as is further discussed in *Chapter 6.4.3 — Internal communication and coordination*.

10.4.4 Further examples of national practices

Statistics Finland National Accounts

As detailed in *ESA 2010 GNI Inventory, Finland* (🔗), Statistics Finland compiles the gross domestic product (GDP) and the gross national income (GNI) in Finland in accordance with the European System of Accounts (ESA 2010). The inventory includes only a report for calculating figures at current prices. Constant price (volume, amount) methods are not discussed. It includes the general description of the compilation of National Accounts, calculation methods according to various approaches (output, income, expenditure), account balancing methods, ensuring exhaustiveness of data, and describes the main data sources.

The main data are published on Statistics Finland's website. Statistical databases contain more detailed data. A press conference is arranged to discuss the first preliminary data. All published data are also available in the Astika time-series database. In addition, statistical data are reported to Eurostat and thus become published in both Eurostat's and the OECD's databases.

National Accounts Benchmarking at Statistics South Africa

The outcome of the five-yearly benchmarking and rebasing of South Africa's national accounts statistics, a project jointly undertaken by Statistics South Africa (Stats SA) and the South African Reserve Bank (SARB), is disseminated in detail in *South Africa's national accounts 1946–2014, An overview of sources and methods Supplement to the South African Reserve Bank, Quarterly Bulletin March 2015* (🔗).

Comprehensive revisions to South Africa's national accounts statistics are typically undertaken every five years in order to incorporate new or additional information that became available, to reclassify transactions where necessary and to rebase estimates at constant prices. Market developments and the concomitant emergence of new products and services furthermore continually necessitate changes to compilation practices.

In addition to the comprehensive longer-term revision of national accounts aggregates and time-series data, the revision also reflects conceptual, methodological and classification changes following the partial implementation of the latest edition of the System of National Accounts (2008 SNA).

The five-yearly comprehensive revisions differ from the regular annual national accounts' revisions due to the scope of the changes and the length of the period to which the revisions apply. The most recent set of revisions drew on information from relevant censuses released by Stats SA during the period 2009 to 2014, a number of sectoral surveys and technical reports, and more detailed producer and consumer price information. Most notable were the 2010/11 Income and Expenditure Survey of Households; the results of the Population Census of 2011; the 2010 General Household Survey; various issues of the Annual Financial Statistics (AFS) survey; various issues of the Quarterly Financial Statistics (QFS) survey; the South African National Survey of Research and Experimental Development compiled by the Centre for Science, Technology and Innovation Indicators on behalf of the Department of Science and Technology (DST); technical reports from the Department of Agriculture, Forestry and Fishing; the Abstract of Agricultural Statistics for various years; and information sourced from the Department of Human Settlements.

10.4.5 Further development

The 2008 SNA is continuously reviewed to ensure its relevance for measuring new developments in the economy, as well as new socioeconomic phenomena and dimensions introduced in national and international policy frameworks. This review is undertaken, under the auspices of the UNSC, by the Inter-Secretariat Working Group on National Accounts (ISWGNA) with the support of the Advisory Expert Group (AEG), as further described below.

Inter-Secretariat Working Group on National Accounts (ISWGNA)

The Inter-Secretariat Working Group on National Accounts (ISWGNA) is one of the oldest working groups of the UNSC and comprises five organizations, namely Eurostat, IMF, OECD, UNSD and the UN regional commissions; and the World Bank.

The ISWGNA mandate, provided by the UNSC, is to:

- provide strategic vision, direction and coordination for the methodological development and implementation of the SNA in national, regional and international statistical systems;

- revise and update the SNA and develop supporting normative international statistical standards and other methodological documents on national accounts and supporting statistics;

- promote the development of databases at international, regional and national level on national accounts statistics;

- promote the implementation of the SNA and supporting statistics; and

- promote the use of national accounts and supporting statistics in policy formulation.

Advisory Expert Group (AEG)

The aim of the Advisory Expert Group (AEG) is to assist the ISWGNA in resolving issues on the research agenda (🔗) of the SNA and emerging research issues and to assist the ISWGNA in the review of the SNA implementation programme (🔗). The composition of the AEG reflects the global community representing all regions in the world. It comprises 18 members (🔗), not including the five representatives of the ISWGNA organizations. The period for which a member is invited to serve in the AEG depends on the particular issue that the ISWGNA needs to consider but is at least three years.

The AEG was initially formed in 2002 to assist the ISWGNA with the update of the 1993 SNA (🔗). At its 41st session in 2010, the UNSC re-established the AEG to support the ISWGNA in its work.

10.5 Balance of Payments

10.5.1 Balance of Payments and International Investment Position Manual, Sixth Edition

Conceptual Framework

> The balance of payments (BoP) measures economic transactions between economic entities resident in a country and the rest of the world.

It also draws a series of balances between inward and outward transactions, provides a net flow of transactions between the country's residents and the rest of the world, and reports how that flow is funded. BoP statistics are typically compiled at the same time as the national accounts. The BoP is an alternative presentation of the rest of the world sector in the national accounts, which provides more detail on international transactions and uses many common data sources.

> More precisely, the relationship between the BoP and the SNA is as follows. The international accounts include the balance of payments, the international investment position (IIP), and the other changes in financial assets and liabilities accounts. The balance of payments statement is equivalent to the rest of the world accounts of the SNA, and the IIP statement may be considered a component of the sectoral balance sheet accounts of the SNA.

Published by the IMF, and most recently revised in 2013, the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6) updates the fifth edition (BPM5) that was released in 1993. The update was undertaken in close collaboration with the IMF Committee on Balance of Payments Statistics and involved extensive consultations with national compilers, and regional and international agencies over many years. It was drafted in parallel with the 2008 SNA to retain consistency between the two systems.

Like earlier editions, the BPM6 provides guidance on the recording of cross-border transactions and positions according to a set of internationally agreed guidelines. In addition:

- it provides greater clarity and details on an expanded range of international activities that affect countries than BPM5;

- it takes into account globalization (for example, currency unions, cross-border production processes, complex international company structures, and issues associated with labour mobility, such as remittances) and builds on the

growing interest in examining vulnerability using balance sheet data (for example, greater elaboration of balance sheet components);

- it contains guidance on new financial instruments and financial activities linked to innovation (for example, on the treatment of short positions, goods under financial leases, and financial intermediation services indirectly measured); and

- it makes the international investment position (IIP) more central to the framework than does BPM5.

Example of national practice

An example of a national application of BPM6 and a good description of the BoP concepts and procedures is provided by the UK Office for National Statistics in a document entitled the Balance of payments QMI (🔗).

The UK BoP measures economic transactions between economic entities resident in the UK and the rest of the world. It also draws a series of balances between inward and outward transactions, provides a net flow of transactions between UK residents and the rest of the world, and reports how that flow is funded.

The UK's BoP statistics are compiled at the same time as the national accounts. The BoP is an alternative presentation of the rest of the world sector, which is a component of the sector and financial accounts (SFA) and uses many common data sources. A BoP statistical bulletin (🔗) and time series dataset (🔗) is published quarterly on the ONS website, 90 days after the end of the period to which the data relate.

Eurostat has established an annual BoP quality reporting (🔗) process for all European Union (EU) member states. This is one of the provisions in the EU Regulation of BoP Statistics (🔗). The reports are based on quantitative measures of quality developed by Eurostat, which align with those assessed within this framework.

The conceptual framework of the UK BoP corresponds to that of the BPM6. This provides objective and coherent international standards to make data for the UK and other countries comparable, reflecting the needs of international and domestic users. The UK economic territory excludes the Channel Islands and the Isle of Man, which have their own fiscal and monetary authorities.

The UK BoP forms part of the broader system of UK National Accounts. The national accounts are a closed system in which both sides of every transaction involving a resident economic entity are recorded. A set of accounts, the 'rest of the world account', capture transactions that involve economic relationships with non-resident entities. The rest of the world accounts are presented from the perspective of non-residents; the reverse is true for the BoP presentation where the accounts are represented from the perspective of residents.

There are a number of different data sources used in the production of SFA and BoP statistics, some of which are ONS surveys and some of which are provided by partners such as the Bank of England (BoE) and HM Revenue and Customs (HMRC).

BoP estimates are used by the Bank of England and HM Treasury to inform decisions on monetary and fiscal policy. The Department for International Trade also uses BoP estimates to identify international trade partners. International users include Eurostat and the IMF; Eurostat uses UK figures to compile aggregate EU accounts, and the IMF collate data as a means of ensuring financial stability and sustainability.

BoP estimates are also used for feeding data into their own regular analyses of the macroeconomy, and also into more ad-hoc and in-depth analyses. For example, the importance of trade with particular countries or groups of countries, the importance of trade in different commodities or services, identifying comparative advantage, changes in import and export prices, economic contribution from trade and income, and looking at inward and outward investment. These analyses and briefings are aimed to inform ministers or decision-makers of the current or historical situation and provide evidence for the policy debate.

BoP data are also of interest to a wider range of user groups including the media, researchers and other regional, national and international policymakers. Some users focus primarily on the developments in the current account and their financing, including the sustainability of the current account imbalances in the longer-term and the need for policy adjustments. Others focus on an analytic presentation, classifying the standard components of BoP and their relationship to other

components (for example, trade and direct investment, and foreign direct investment and productivity). The BoP allows a sector breakdown of the financial account and their relationship to domestic sources of finance.

10.5.2 Other related guidelines and manuals

Balance of Payments and International Investment Position Compilation Guide (BPM6 CG), 2014, IMF

The BPM6 CG is a companion document to the BPM6. It updates the guide that was released in 1995 to accompany the BPM5. Its purpose is to show how the conceptual framework described in the BPM6 may be implemented in practice. It is not intended as a stand-alone manual. In other words, users of the Guide should be familiar with the BPM6. Appendix 6 of the Guide explains the relationship between the BPM6, and the 2008 SNA as outlined in *Chapter 10.5.1 — Balance of Payments and International Investment Position Manual, Sixth Edition*. In describing how the international accounts statements may be compiled, the Guide thus illustrates how the rest of the world account of the SNA may be compiled.

The Guide covers:

- extraction of data from collections (e.g., international merchandise trade statistics, migration statistics, and other official sources) over which the compiler may have some influence but not full control;

- extraction of data from collections (such as reporting systems for foreign exchange and other international transactions and surveys of businesses) managed, either solely or jointly with other statistical compilers, by the balance of payments compiler;

- compilation of the international accounts, including the balance of payments, supplementary balance of payments series, and the IIP statement;

- international accounts data management, publication, dissemination, and communication with users;

- evaluation and development of data sources and compilation methods as necessary; and

- assessment of data quality.

Balance of Payments Coding System, 2012, International Monetary Fund

The IMF BoP Coding System was developed by the International Monetary Fund in cooperation with Eurostat, the OECD, and the ECB. It is designed to facilitate the exchange of data on the balance of payments, international investment position, international trade in services, and foreign currency liquidity among these organizations, their member states, and other interested organizations or entities. The system also appears as Appendix 9 Balance of Payments Coding System within the BPM6.

Extended Balance of Payments Services Classification 2010 (EBOPS 2010)

The *EBOPS 2010 classification* (⬡) appears as Annex I in the *Manual on Statistics of International Trade in Services 2010* (⬡). It provides a breakdown of the Balance of Payments Trade in Services item (debit and credit) as defined in BPM6, by types of services. The classification thereby meets a number of user requirements, including the provision of more detailed information on Trade in services as required in connection with the General Agreement on Trade in Services (GATS).

10.5.3 Further development

The IMF Committee on Balance of Payments Statistics (⬡) was established in 1992 to:

- oversee the implementation of the recommendations contained in the reports of two IMF Working Parties that investigated the principal sources of discrepancy in the global balance of payments statistics;

- advise the IMF on methodological and compilation issues in the context of the balance of payments and international investment position statistics; and

- foster greater coordination of data collection among countries.

The Committee terms of reference (🔗) provide more details.

10.6 Environmental accounts

## 10.6.1 System of Environmental Economic Accounting

Policy and decision makers require consistent, comparable and comprehensive statistics and indicators that consider interlinkages and dependencies across different domains. Integrated policies depend upon integrated information.

> Unfortunately, in many cases, the production and dissemination of the various statistics relevant to sustainable development have remained relatively disparate, following the traditional **data silo** approach, rather than an integrated systems approach.

Moreover, given that data collection often involves many different agencies with different scopes of responsibility, there is usually limited collaboration in the collection, management and sharing of data across institutions. This is particularly true for environmental information and policies.

To address these problems, the System of Environmental-Economic Accounting (SEEA) is the international statistical standard for measuring the environment and its relationship with the economy. It follows an integrated systems approach. In particular, it applies an accounting approach to measuring the environment. As such, the concepts, definitions and classifications are broadly consistent with the SNA, thus facilitating the integration of environmental and economic statistics.

The SEEA has two parts:
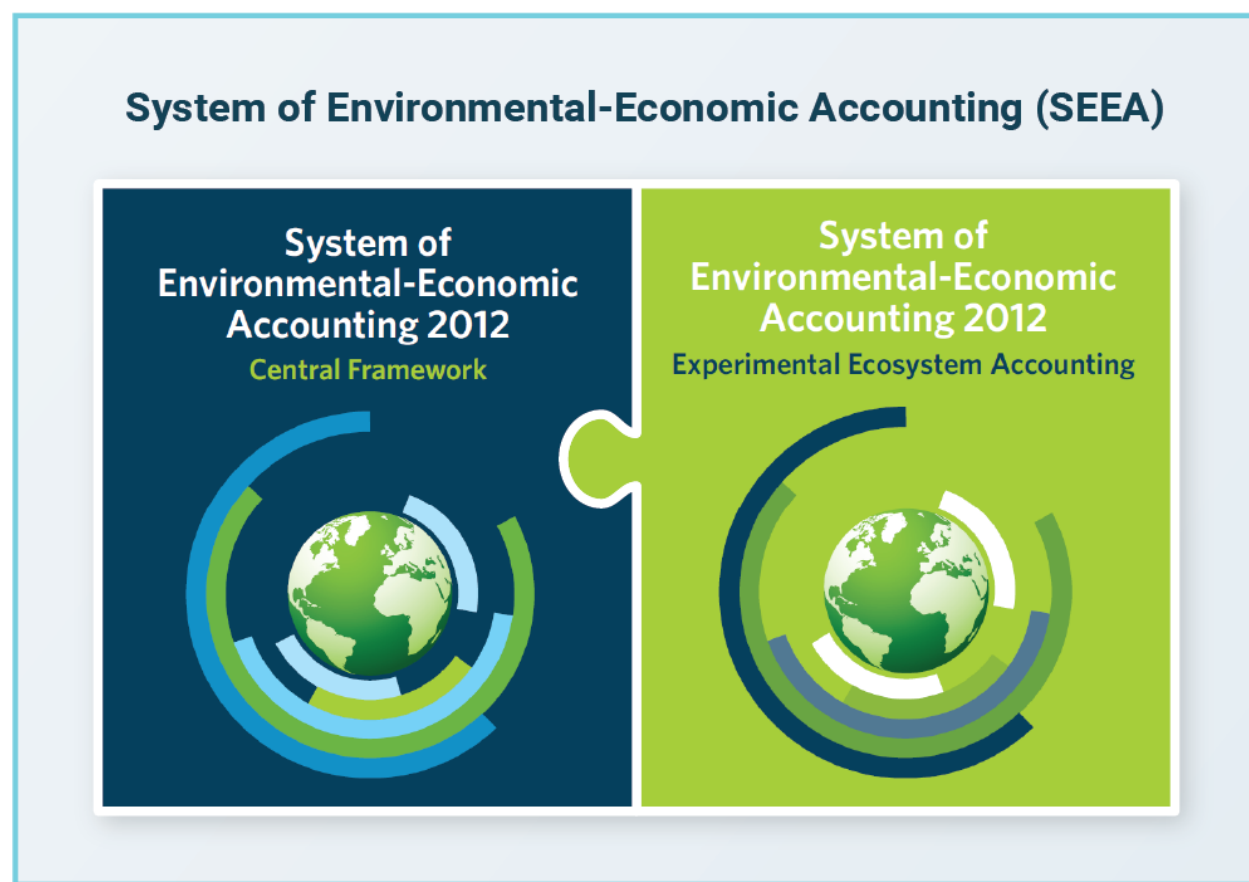
the SEEA-Central Framework (SEEA-CF), the SEEA-Experimental Ecosystem Accounting (SEEA-EEA). In addition, the SEEA Applications and Extensions (⌀) illustrate to compilers and users of the SEEA-CF how the information can be used in decision making, policy review and formulation, analysis and research.

The SEEA-CF looks at individual environmental assets, such as water, energy, forests and fisheries resources and how these assets are extracted from the environment, used within the economy and returned back to the environment in the form of air emissions into the air and the water as well as waste. It was adopted by the UNSC as the first international standard for environmental-economic accounting in 2012.

The SEEA-EEA complements the SEEA-CF and represents international efforts towards a coherent accounting approach to the measurement of ecosystems. Ecosystem accounts enable the presentation of data and indicators of the level and value of ecosystem extent, ecosystem condition and ecosystem services in both physical and monetary terms in a spatially explicit way. The SEEA-EEA is currently being revised (⌀) with the intention of reaching agreement on as many aspects of ecosystem accounting as possible by the end of 2020.

Both, the SEEA-CF and SEEA-EEA provide the framework for measuring natural capital and make explicit the relationship between the environment and well-being, which is not depicted through traditional measures of economic activity, such as GDP and national income.

Because of its integrated nature and its reliance on scientific knowledge, the SEEA is a catalyst in bringing together users and producers of information on the environment and the economy. It is also an important tool in enhancing the new role of the NSO as data steward, taking the role of coordinating the production of data, including Big Data, to respond to new policy demands that take the environment into account.

Of course, effective use of the SEEA depends upon good environment statistics being available.

10.6.2 Monitoring sustainable development

A critical aspect of the **2030 Agenda for Sustainable Development** (⌀) is the need for integrated policies that speak to the three pillars of sustainability—economy, society and environment—and how they work together.

More specifically, the interlinked nature of the SDGs requires an integrated approach to policy decisions, based on a better understanding of the interactions and trade-offs between the different pillars of sustainability. Thus, the integrated approach of the SEEA is well-suited to the SDGs. By eliminating data silos and highlighting interactions and trade-offs, the SEEA provides a means of monitoring progress towards the SDGs, the post-2020 global biodiversity framework, and the Paris Agreement.

Because the SEEA includes information on both individual environmental assets, such as timber and water, and on ecosystems and how they relate to the economy, it can be used to measure several SDG indicators directly. Overall, it supports direct measurement or supplemental information for 40 indicators within nine SDGs. In addition, SEEA implementation itself forms the basis of Indicator 15.9.1 on progress towards Aichi Target 2 (⌀). In addition to the SDGs, the SEEA provides a useful framework for informing climate change and biodiversity policies as well as progress towards a circular economy.

While the SEEA is well suited to help countries monitor progress towards the SDGs, it does not propose or recommend any single indicator or basket of indicators for use in developing and accessing policy. In fact, one of its major strengths is that it integrates statistics for multiple purposes and multiple scales of analysis. At the same time, there are several key aggregates and indicators that can be directly derived from the SEEA accounting tables and are of interest to policy analysis and target-setting in various domains. Importantly, because the SEEA takes a systems approach and is an international statistical standard, all aggregates and indicators derived from the SEEA are consistent and comparable.

10.6.3 Other guidelines and manuals

In addition to the SEEA-CF, SEEA-EEA there are guidelines and manuals, which can be found online at the SEEA knowledge base (🔗), and which are summarised below.

Technical Recommendations in support of the SEEA-EEA

The Technical Recommendations (🔗) serve as an intermediate step in the transition from the 2012 SEEA-EEA to its revision, which is scheduled for completion in 2021. The aims to support ecosystem accounting-related testing and research while elaborating the concepts presented in the SEEA EEA.

SEEA for Agriculture Forestry and Fisheries

The *SEEA for Agriculture, Forestry and Fisheries* (SEEA AFF) is a statistical system for organizing data to enable the description and analysis of the relationship between the environment and the economic activities related to agriculture, forestry and fisheries. It is fully consistent with the SEEA-CF It applies and expands the SEEA-CF concepts and methods related to agriculture, forestry and fisheries.

SEEA-for Energy

The *SEEA for Energy* (SEEA-Energy) is a multi-purpose statistical framework for organizing energy-related statistics. It

describes the energy mix used by the economy, the stocks and changes in stocks of energy and mineral resources including depletion, the inventories of energy held within the economy as well as current and capital expenditures to extract, exploit and distribute energy resources. It also elaborates the compilation of energy accounts, building on energy statistics and balances. The SEEA Energy supports analysis of the role of energy within the economy, the state of energy inputs and various energy-related transactions of environmental interest. It is fully consistent with the SEEA-CF. Energy information is typically presented in physical terms, but the SEEA-Energy also applies monetary valuations to various stocks and flows, based on the SEEA accounting approach.

SEEA for Water

The *SEEA for Water* (SEEA-Water) is an integrated approach to water monitoring, bringing together a wide range of water-related statistics across sectors into one coherent information system. The SEEA-Water is the conceptual framework and set of accounts which presents hydrological information alongside economic information in a consistent way. It is fully consistent with the SEEA-CF.

Enhance Natural Capital Accounting Policy Uptake and Relevance

Four papers on the policy applications of the SEEA have been developed under the BMZ-funded project Enhance Natural Capital Accounting Policy Uptake and Relevance (EnhaNCA). They include three separate papers on issues in biodiversity, climate change, and macroeconomic applications of the SEEA, respectively, and a paper on the overall policy applications of the SEEA.

Framework for the Development of Environment Statistics (FDES 2013)

In its 44th session, the UNSC endorsed the revised *Framework for Development of Environmental statistics (FDES), 2013* (🔗) as the framework for strengthening country environment statistics programmes and recognized it as a useful tool in the context of the SDGs and the Post-2015 Development Agenda.

The Commission also endorsed:

- the Blueprint for Action (🔗) which documents a way forward for making the FDES 2013 operational in countries that need guidance in starting or further developing their environment statistics programmes; and

- the establishment of the Expert Group on Environment Statistics (further described below) to collaborate with UNSD in developing methodological tools, hands-on guidance, and training material that contribute to the implementation of the FDES.

10.6.4 Examples of national practices

The examples below are from just a handful of the many countries that that UNSD has supported in compiling the SEEA.

Brazil

The Brazilian Institute of Geography and Statistics (IBGE) has been one of the pioneers in the compilation of the SEEA in South America. It has made important advances in land cover and compiles land cover and use accounts every two years. Work is also ongoing in developing energy and forest accounts. In addition, under the EU-funded project, Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES), IBGE is piloting SEEA-EEA accounts in the Matopiba region. The project will analyse a number of ecosystem services, such as water flow regulation and soil retention.

Mexico

Mexico's National Institute of Statistics and Geography (INEGI) was the first Latin American NSO to compile SEEA accounts. It is also currently participating in the NCAVES project, in which context it is developing land and ecosystem extent accounts, condition accounts and ecosystem service supply accounts (including carbon storage and sequestration, provision of crops, water supply and coastal protection).

INEGI also compiles water accounts, forest accounts (physical and monetary balance sheets), fisheries accounts and material flow accounts. The accounts are also used to derive the headline indicator Ecologically-Adjusted Net Domestic Product, which estimates the costs of natural resources depletion and environmental degradation.

India

Work on environmental-economic accounting began in 2011 when a high-level Expert Group was initiated by the Ministry of Statistics and Programme Implementation (MOSPI) with the mandate of developing a framework for green national accounts of India and preparing a roadmap to implement the framework. In 2018, the Central Statistics Office released India's first official environmental-economic accounts containing asset accounts in physical terms for forests, land, minerals and water. MOSPI is also participating in the NCAVES project to pilot SEEA EEA accounts in both physical and monetary terms.

Indonesia

Badan Pusat Statistik (BPS) compiles both SEEA-CF and SEEA-EEA accounts. Under a UN Development Account project (⦚) Indonesia began the compilation of both energy and air emission flow accounts. In addition, BPS compiles asset accounts for land, energy and mineral resources and timber resources. In terms of the SEEA-EEA, Indonesia has developed several accounts with the support of the World Bank Global Program on Sustainability, including ecosystem extent accounts and SEEA EEA accounts for peatlands.

Malaysia

The Department of Statistics, Malaysia also participated in the UN Development Account project (⦚), compiling energy, air emission and water accounts. Under this project, the Department also developed a national plan for SEEA implementation (⦚), outlining priorities and opportunities for inter-institutional collaboration.

The Philippines

The Philippines Statistical Authority (PSA) published a Technical Report on Physical Asset Accounts: Asset Accounts for Land Cover (2010-2015). It focuses on the tree-covered areas and presents a short background on the status of forest and how the SEEA CF is operationalized. The PSA also published a report describing its experience in adopting the FDES.

Netherlands

Statistics Netherlands compiles both SEEA-CF and SEEA-EEA accounts and has been at the forefront of the implementation of the SEEA EEA. In collaboration with Wageningen University, Statistics Netherlands has developed all the core SEEA EEA accounts in both physical and monetary terms, as well as carbon and biodiversity accounts. It has also developed SEEA accounts for the Dutch North Sea.

Kenya

The Kenya Bureau of Statistics (KBS) recently began compiling SEEA accounts under the UN Development Account project (⦚). It undertook a pilot compilation of physical energy flow accounts, and now regularly compiles physical energy flow accounts in the economic survey.

South Africa

Statistics South Africa (SSA) has been compiling SEEA accounts since 2000, starting with SEEA-Water accounts. It also compiles other SEEA-CF accounts, including energy, minerals and fisheries.

South Africa is also a project country under the NCAVES project, where it is leading implementation of ecosystem accounting. SSA has piloted accounts for river ecosystems and is now focusing on national ecosystem extent, urban, protected area, marine ecosystems and species accounts.

Uganda

The Uganda Bureau of Statistics (UBOS) recently developed a national plan (⦚) for SEEA implementation and began compiling SEEA-Water accounts under the UN Development Account project (⦚). UBOS has also compiled SEEA-EEA accounts for ecosystem extent and species.

United Kingdom

The UK Office of National Statistics (ONS) compiles both SEEA-CF and SEEA-EEA accounts. It provides regularly updated SEEA-EEA accounts in partnership with the UK Department of Environment, Food and Rural Affairs. The UK ecosystem accounts have been developed by integrating bottom-up, spatially disaggregated modelling approaches with

data at a national (top-down, aggregate) level. This has enabled a time series of high-level accounts for various broad habitats to be compiled, in both physical and monetary terms.

10.6.5 Further development

United Nations Committee of Experts on Environmental-Economic Accounting

The United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA) was established by the UNSC 2005 as an intergovernmental body to provide overall vision, coordination, prioritization and direction in the field of environmental-economic accounting and supporting statistics. Its work programme is organized along with the following areas of work: (a) coordination; (b) methodological advances; (c) data collection and development; (d) capacity building; and (e) communication and response to emerging issues. Each of this area is led by a representative from a national statistical office or international agency.

The UNCEEA has established targets for SEEA implementation. By the end of 2020, the aim is to have at least 100 countries implementing the SEEA-CF and at least 50 countries implementing the SEEA-EEA. This aim is on track to being achieved. As the SEEA often does not require new data collection but rather reorganization of existing data, countries in all regions and at all stages of development are compiling the SEEA, as indicated in Figure 11. In summary, as of the beginning of 2020, over 90 countries have compiled SEEA-CF accounts and over 40 countries have implemented or are currently implementing SEEA-EEA.

Fig. 10.1: Countries implementing the SEEA in 2021

To help advance the SEEA-EEA and its implementation, the UNCEEA is currently undertaking a revision of the SEEA-EEA, with the intention to reach agreement on as many aspects of ecosystem accounting as possible by 2020. The revision has been a collaborative effort between statisticians, national accountants, ecologists, environmental economists, geospatial experts and academia, and the UNCEEA aims to elevate the SEEA-EEA to the level of a standard at the UNSC in 2021. A Forum of Experts bringing together experts from different communities is organized every year to discuss advances in implementation and share experience in implementation and methodological development.

The UNCEEA is also examining the possible integration of the SEEA-CF and SEEA-EEA. Given that they are complementary frameworks, exploring the synergies between the two and creating a unified SEEA framework could bring substantial benefits.

London Group on Environmental Accounting

The London Group on Environmental Accounting (🔗) held its first meeting in 1993 and since meets more or less annually. The purposes of the Group are:

- to play a leadership role in defining international best practices in the theory and practice of environmental accounting within the framework of the SEEA);

- to provide a forum for the sharing of national and international expertise in this field;

- to assist the United Nations Committee of Experts on Environmental Accounting (UNCEEA) with advancing methodologies and developing statistical standards for environmental accounting;

- to encourage the adoption of statistical standards and best practices in the field by promoting the results of the Group's efforts via website, concepts and methods manuals, operational manuals and other means.

The topics covered by the Group to date include:

- physical flow accounts (materials, water and energy);

- asset accounts for natural resources and land;

- environmental activity accounts and related flows;

- ecosystem accounts;

- applications and extensions of environmental accounts; and

- training and implementation material.

Expert Group on Environment Statistics (EGES)

The Expert Group on Environment Statistics (EGES) was convened in 2014 and comprises experts on environment statistics and related areas from all geographical regions representing United Nations member States, as well as international and regional organizations. The EGES meets annually to review the progress made in the implementation of the FDES 2013 in countries. It also assesses the progress made in the development of methodological and data collection guidance in environment statistics needed for the compilation of environmentally related SDG indicators and environmental-economic accounts, as well as for the reporting to Multilateral Environmental Agreements. Complementarily, during each calendar year, the EGES organizes its work remotely through smaller teams tasked with specific areas of work.

The main objectives of the EGES are to support the work on environment statistics led by UNSD in the following areas:

- Standardization of methods, classifications and definitions in environment statistics.

- Data collection, processing and dissemination of environment statistics, in particular in the areas of water and waste statistics, as well as support the work of the environmentally-related SDG indicators.

- Technical cooperation, training and capacity development in environment statistics.

- Coordination and harmonization of environment statistics and indicator programmes and activities.

10.7 Labour statistics and labour accounts

10.7.1 Conceptual framework

The labour statistics domain covers a wide range of labour-related topics. There is no single overarching internationally accepted framework for labour statistics or accounts like the SNA. However, there is a suite of internationally adopted statistical standards, guidelines and related indicator frameworks that can be referenced by those seeking to develop a comprehensive system of labour statistics. For those interested in compiling a labour account, there are national examples.

The International Labour Organization (ILO) is the UN international agency with the mandate to develop statistical standards in the domain of labour. It has fulfilled this purpose since its foundation in 1919 through the International Conference of Labour Statisticians (ICLS). The ICLS is a forum where countries discuss and adopt common definitions and agree on guidelines and standards (🔗) that subsequently act as a reference point for national and international labour statistics.

Reflecting the wide scope of labour statistics, many topics have been covered by resolutions and guidelines over time. Some of the main ones are:

- employed persons and jobs;

- unemployment and labour underutilization;

- hours of work;

- income from employment and labour costs;

- organization of the labour market (i.e., statistics on collective labour agreements, industrial disputes and trade-union memberships);

- health and safety at work;

- informal employment and the informal sector;

- child labour;

- labour migration; and

- key classifications including those relating to occupation and status in employment.

The ICLS has also endorsed the Decent Work Indicator Framework (🔗) as an overarching set of indicators covering ten substantive elements corresponding to the four strategic pillars of the ILO's Decent Work Agenda (full and productive employment, rights at work, social protection and the promotion of social dialogue). Along with the range of resolutions and guidelines adopted by the ICLS, this indicator framework gives a sense of the wide scope of the labour statistics domain. Among other things, it enables a range of analytical approaches that can best be referred to as **labour accounting**, given that different countries use the term **labour accounts** to refer to different types of analysis.

10.7.2 Key resolutions and standards of the ICLS

Among the many resolutions and standards which have been adopted through the ICLS, a number of resolutions are particularly key in setting a framework for labour statistics and relevant to labour accounts.

19th ICLS Resolution I: Resolution concerning statistics on work, employment and labour underutilization

At the 19th ICLS in 2013, a landmark set of standards concerning statistics on work, employment and labour underutilization was agreed (🔗). They are the basis for all statistics building on the concept of employment (which is the focus of labour accounting) although they extend beyond employment. The main features are:

- The first statistical definition of the concept of **work** and a **forms of work framework** which identifies multiple forms of paid and unpaid work, distinguished by the beneficiary of the production, the receipt of payment (or not) and the purpose of the work (to gain workplace experience, to produce goods for household consumption etc.). Importantly, the framework recognises that people may engage in different working activities in the same period of time, enabling statistics to be produced on participation and time spent in different forms of work, as well as highlighting total work burden.

- An updated definition of **employment** as **work done in exchange for pay or profit**. This is narrower than the widely applied definition adopted at the 13th ICLS that referenced all activities done to produce goods or services within the SNA production boundary. The 13th ICLS conceptually included some forms of unpaid work, such as subsistence farming within the scope of employment. The new framework identifies different forms of work for separate measurement and reporting, more closely aligning with policy needs and creating a more comprehensive framework.

- Definitions of different components of **labour underutilization** to complement unemployment, namely time-related underemployment and the potential labour force (comprising people without employment that fulfil some but not all of the criteria of unemployment). Definitions are also provided for four different labour underutilization indicators, of which the **unemployment rate** is one.

The definitions from the 19th ICLS should be used as the reference point for analysis centred on employment or labour underutilization, such as labour accounting, as described below.

18th ICLS Resolution i: Resolution concerning the measurement of working time

These standards concerning the measurement of working time (🔗) define several different concepts of **working time** which can be used for different analytical purposes, such as the estimation of total hours worked or full-time equivalents (FTEs), which can be important in a labour accounting context. The working time concepts defined are:

- Hours actually worked;
- Hours paid for;
- Normal hours of work;
- Contractual hours of work;
- Hours usually worked;
- Overtime hours of work.

Among these concepts, **hours actually worked, and hours usually worked** are the ones most extensively used in measurement, and hours actually worked is the typical reference point for calculations of total hours worked or FTEs.

16th ICLS Resolution II: Resolution concerning the measurement of employment-related income

The most recent statistical standards covering employment-related income (🔗) were adopted at the 16th ICLS in 1998. The standards include a definition of employment-related income and different components of it. The standards distinguish between income related to **paid employment** and **income related to self-employment** recognising that the type of income earned can differ substantially between these two groups.

10.7.3 Other standards and guidelines

A variety of other standards may be relevant to labour accounts depending on the analytical approach chosen. For example, a labour account may be aggregated using different classifications such as the international classification of status in employment (ICSE-93 or ICSE-18) or international standard classification of occupation (ISCO-08).

The latest international classification of status in employment (ICSE-18) was adopted at the 20th ICLS in 2018, replacing ICSE-93. The new classification is more detailed than ICSE-93 and provides improved analytical potential, building from 10 mutually exclusive categories at the lowest level of the hierarchy up to higher-level groupings. Another new feature of ICSE-18 is that it contains two sub-classifications built on the same ten detailed groups.

- **ICSE-18-R** has a hierarchy that is aggregated based on the level of exposure to the economic risk of the worker in relation to their job/business, and at the top level distinguishes between workers in employment for pay and workers in employment for profit.

- **ICSE-18-A**, by contrast, is aggregated based on the level of authority of the worker, distinguishing at the top level between independent workers and dependent workers.

In implementation, careful attention needs to be paid to the concepts, classifications and practices used to ensure the appropriate use of the data for labour accounts or any other analytical purpose. This is particularly important where, as is generally the case, multiple sources of data are used. Sources may differ in various ways, either conceptually or in measurement approach. For example, the reference point (employment concept) for a measure of working time used should align with the employment concept used in a measure of employment or any other measures used in the accounting framework. Likewise, attention should be paid to the classifications; for example, one source may use ICSE-93, while

another uses ICSE-18, necessitating some adjustments during analysis. All such issues should be carefully considered in planning and undertaking the analysis.

10.7.4 Labour accounts

The objective of labour accounts is to provide an integrated conceptual framework for producing a coherent and consistent set of aggregate labour market statistics. A labour account is designed to complement the existing suite of labour statistics to provide a logical framework for obtaining internally consistent estimates of key labour market variables. These key variables can assist users in making sense of seemingly inconsistent labour-related data, which are often based on different reference periods, populations, concepts, definitions and methodologies drawn from a variety of business and household surveys and other administrative sources.

A labour account provides a framework to bring together labour market data from multiple statistical sources into a coherent and consistent set of labour statistics. It is a complement to the existing suite of labour statistics. Users should continue to use the Labour Force Survey (LFS) for headline estimates of employment, unemployment and persons not in the labour force.
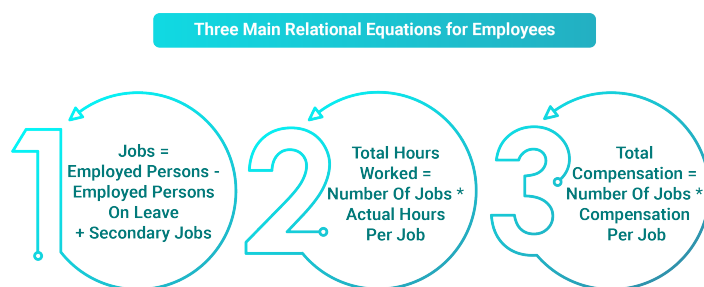
While there are currently no international standards for the production of a labour account, the ILO has documented two compilation approaches and a four-step process, which has been followed, to varying degrees, by the NSOs in Australia, Denmark, the Netherlands and Switzerland in compiling their own labour accounts.

A *Step Forward to a Coherent and Timely Description of the Labour Market* (🔗) describes the four-step process and the two compilation approaches, which are:

- a **cross-sectional** approach involving confrontation and reconciliation of key labour market measures; and

- a **longitudinal** approach, which incorporates changes to population and labour force via births, deaths, and net migration, and includes measures such as duration of employment.

A labour account provides a logical framework within which to bring together labour market data from a variety of business and household surveys and other administrative sources. The inputs from these sources and the derived statistics need to be harmonized, adjusted and integrated. Decisions that are taken in the production of a labour account within the national context need to be explicitly documented and published. The integration process can be viewed as a four-step procedure.

In the first step, the model and the identity equations are defined. The identity equations can be derived from the model. These identities may be seen as the most important part of the labour accounts, not only from the point of view of users of statistics, who will be presented with consistent data but even more from the producer's point of view. These identities enable quality checks of sources. For example, in the context of the working time accounts covering registered paid employment, the document cites three main relational equations for employees:

Three Main Relational Equations for Employees

1. Jobs = Employed Persons - Employed Persons On Leave + Secondary Jobs
2. Total Hours Worked = Number Of Jobs * Actual Hours Per Job
3. Total Compensation = Number Of Jobs * Compensation Per Job

- jobs = employed persons - employed persons on leave + secondary jobs;

- total hours worked = number of jobs * actual hours per job;

- total compensation = number of jobs * compensation per job.

The second step involves the harmonization of definitions and classifications in source statistics and achievement of full coverage. The latter requires decisions to be made regarding which source is to be the primary source for each variable. Data are cut to size or expanded according to newly defined populations and definitions. After harmonization and achievement of full coverage, the aggregate values may still disagree in practice, but the findings from source statistics are aligned on shared parameters.

The third step is the minimization of measurement errors. It is highly likely that the harmonized data from the second step do not satisfy the definitional equations. By confrontation within identity relations, errors, irregularities and improbabilities are traced and corrected.

The fourth step involves balancing. Very small differences are neglected in the third step. These are smoothed out in the fourth and final step of the integration process. Here a mathematical procedure can be used by which the adjustments are minimized under the condition that the values attached meet the identity equations.

10.7.5 Australian Labour Account: Concepts, Sources and Methods, Oct 2019

The Australian Labour Account (🔗) focuses on the cross-sectional approach and provides time-series data spanning 25 years. It has been designed to align with the 2008 SNA, as applied in the Australian System of National Accounts (ASNA), in particular, with the ASNA production and residency boundaries. This ensures direct compatibility with national accounts and productivity estimates, as well as providing a mechanism for bringing together conceptually related aggregate data from business, household and administrative sources. It is also consistent with the guidelines and standards established by the ILO.
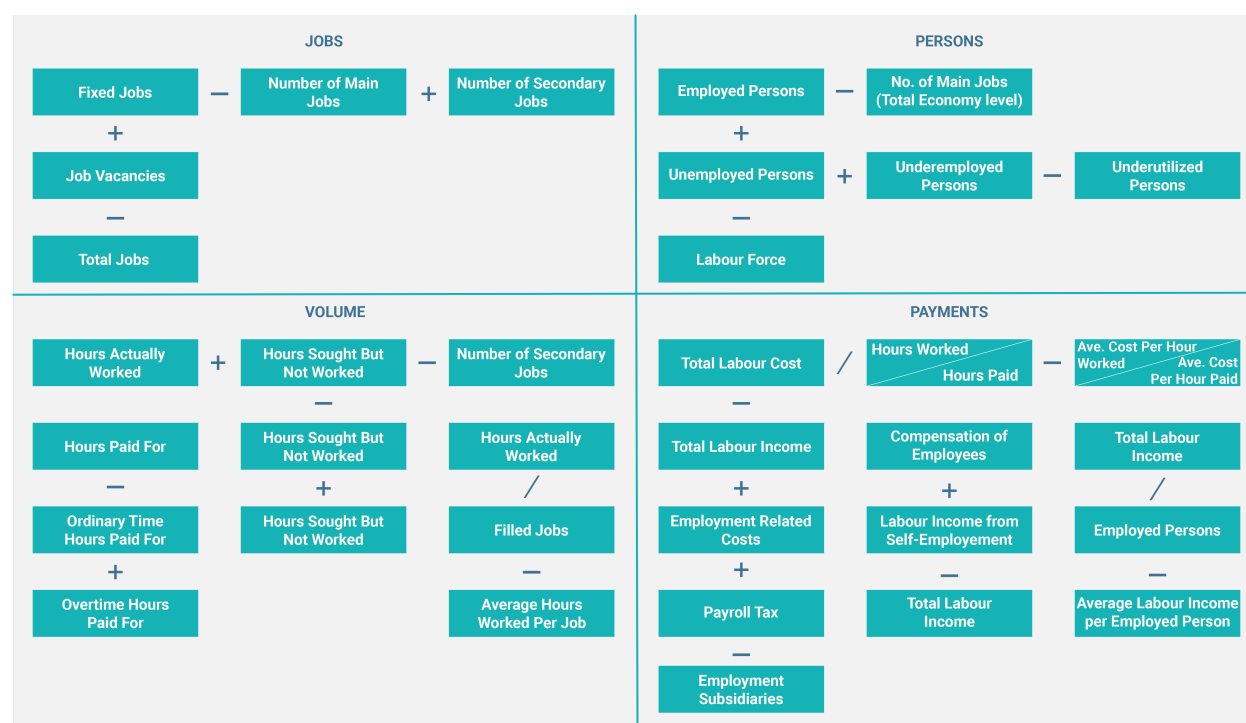
Fig. 10.2: Australian Labour Account identity relationships – Jobs, Persons, Volume and Payments

The scope of the Australian Labour Account is consistent with that of the national economy, as defined in the ASNA, which follows the 2008 SNA international standard. The framework incorporates four distinct quadrants: Jobs, Persons, Labour Volume and Labour Payments and covers all types of employment, including employees, self-employed and contributing family workers. The four quadrants are linked by a set of identity relationships, which the aggregate statistics must satisfy. These identities are shown in Figure 12. Some relationships are direct, such as the number of employed

persons in the total economy is equal to the number of main jobs, while other relationships are considered indirect or derived, such that the relationship is based on an average or ratio measures such as average hours worked per job, or average labour income per employed person.

- **The Jobs Quadrant** provides data on numbers of filled jobs derived separately from business and household sources, plus data on vacant jobs to provide a total number of jobs in the economy.

- **The Persons Quadrant** includes data on numbers of employed persons, together with data on numbers of unemployed and underemployed persons (derived from household survey sources).

- **The Labour Volume Quadrant** provides data on hours paid for (derived from business survey sources) and hours worked (from household survey sources), plus data on additional hours of work sought by unemployed and underemployed persons (from household survey sources).

- **The Labour Payments Quadrant** provides data on labour income and employment costs (from business survey sources).

The Australian Labour Account combines data from the persons, jobs, labour volume and labour payments tables to calculate average hours worked, average remuneration (per person and per job), and average labour cost per hour worked. The data tables are compiled using interpolation, extrapolation, backcasting or benchmarking methods. The methods chosen are based on two main factors: the context in which the data were originally collected, and ability to fill data gaps between collection points or periods.

Various data sources (published and unpublished) are used in compiling the four quadrants. In general, the same data sources are used to compile both quarterly and annual labour account estimates. Quarterly survey estimates are benchmarked to annual survey estimates where possible. The method used to annualise data varies for each quadrant, depending on whether data are stock or flow estimates. The Australian Labour Account data at an industry level is derived where possible from data classified by industry reported in both business and household surveys. Where data at an industry level is not reported in surveys, the industry detail has been modelled using alternative sources.

Outputs from the Australian Labour Account consist of a number of spreadsheets and data sets, produced for both quarterly and annual data. Data are also produced for both balanced and unbalanced estimates. Quarterly data are produced at the industry division level, and the annual data are available at the industry subdivision level. Data are presented quarterly for the four quadrants for the balanced data for original (unadjusted), seasonally adjusted and trend estimates. For the unbalanced data outputs, data are presented quarterly for the four quadrants in original terms only.

The Australian Labour Account data provides an overarching picture of the Australian labour market over the past 25 years. This rich data source can be used for industry analysis of labour growth and performance in terms of people, jobs, hours, labour costs and income to better understand how the Australian labour market has evolved over time. In its Statement of Monetary Policy, February 2019 (🔗) the Reserve Bank of Australia made the following remarks regarding the Australian Labour Account:

- "While the LFS will remain the best and most timely indicator of overall labour market developments (including employment growth and the unemployment rate), the ABS suggests that the **Labour Account is likely to become the primary source of industry employment information**."

- "The Labour Account's industry employment numbers have a number of potential advantages over those in the LFS. **The industry classification in the Labour Account aligns better with the measurement of industry value-added in the national accounts**, and so the Labour Account should contribute to better estimates of industry productivity growth."

- "The Labour Account also takes a more comprehensive approach to estimate the amount of labour employed in each industry, for instance, by including the employment of non-resident visa holders."

10.7.6 Further development

There are no immediate plans to develop international standards which could be adopted at the ICLS and no standing international working group addressing the topic in a dedicated manner. This may change at some future date depending on the evolution of country demands.

10.8 Tourism accounts

10.8.1 Concept, frameworks and guidelines

Glossary of Tourism Terms

UNWTO Glossary of Tourism Terms (⊘), developed by the UN World Tourism Organization (UNWTO) brings together definitions of some 140 terms that are relevant in developing and implementing a **tourism satellite account (TSA)** and **tourism statistics**. In addition to defining tourism and terms specific to tourism, the Glossary includes terms that are used in other branches of statistics and are drawn from the corresponding international standards, guidelines and manuals, such as the 2008 SNA.

> Tourism is defined in the Glossary as a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes. In the context of tourism, the people involved are referred to as visitors (and may be tourists or excursionists; residents or non-residents) and tourism has to do with their activities, some of which involve tourism expenditure.

Tourism Satellite Account: Recommended Methodological Framework

As tourism cuts across different sectors, it cannot be measured in the same way as sectors of the economy, such as manufacturing or retail trade. Thus, the UNWTO, the OECD, Eurostat and the UNSD developed the *Tourism Satellite Account: Recommended Methodological Framework (TSA RMF) 2008* (⊘). It provides a common conceptual framework for constructing a TSA and is the main tool for the economic measurement of tourism. It adopts the basic system of concepts, classifications, definitions, tables and aggregates of the 2008 SNA. Thus, it allows the harmonization and reconciliation of tourism statistics from an economic (SNA) perspective. This enables the generation of tourism economic data (such as **tourism direct GDP**) that are comparable with other economic statistics.

A TSA uses the SNA logic of contrasting data from the demand-side of the economy (the acquisition of goods and services by visitors while on a tourism trip) with data from the supply-side (the value of goods and services produced by industries in response to visitor expenditure).

A TSA can be viewed as a set of up to 10 summary tables, each with their underlying data.

1. Inbound tourism expenditure

2. Domestic tourism expenditure

3. Outbound tourism expenditure

4. Internal tourism consumption

5. Production accounts of tourism industries

6. Total domestic supply and internal tourism consumption

7. Employment in tourism industries

8. Gross fixed capital formation of tourism industries

9. Tourism collective consumption

10. Non-monetary indicators

To be considered a TSA, at least Tables 1-6 should be compiled. Given the importance of tourism as an employment generating sector, it is recommended that the TSA also includes Table 7 as well as the non-monetary indicators in Table 10, which can provide different insights from an analysis viewpoint.

Compilation of Tables 8 and 9 often require data to be collected from complex sources, so they should be considered at a more advanced stage of TSA development.

International Recommendations for Tourism Statistics, 2008

The *International Recommendations for Tourism Statistics (IRTS) 2008* (🔗) provide a comprehensive methodological framework for collection and compilation of tourism statistics in all countries irrespective of the level of development of their statistical systems. They are primarily addressed to staff in NSOs and national tourism administrations involved in the compilation of tourism statistics. The document also contains a wealth of information that might be of interest to data users who would like to understand better the nature of tourism data. In addition, general guidance is provided with respect to data sources and data compilation methods, which are detailed in the accompanying compilation guide (discussed below).

The international recommendations were drafted by the UNWTO in close cooperation with the UNSD, the ILO and other members of the Inter-Agency Coordination Group on Tourism Statistics (further described below). A draft version of the recommendations was reviewed and endorsed by the United Nations Expert Group on Tourism Statistics in June 2007 and was adopted by the Statistical Commission at its thirty-ninth session (E/CN.3/2008/34) (🔗).

International Recommendations for Tourism Statistics 2008 Compilation Guide4

The *IRTS Compilation Guide, 2014* (🔗) is a companion document to the IRTS 2008. It provides further clarifications and practical guidance on using sources and methods to compile statistics on tourism. It is designed to support the production of a high-quality set of basic data and indicators in each country and to strengthen the international comparability of tourism statistics.

The Compilation Guide discusses new data sources and the application of statistical methods to changing circumstances. Given that statistical methods evolve over time, it does not present a prescriptive or definitive approach to compiling tourism statistics. It includes:

- comments and explanations concerning the different concepts introduced and used in IRTS 2008;

- orientation on the issues behind these recommendations;

- guidance on how to compile the recommended variables and aggregates; and

- examples of how some countries have solved specific problems.

Some of the solutions can be considered as best practice. Others are geared to particular national circumstances but, nevertheless, are interesting as illustrations of how countries can overcome obstacles encountered in the compilation process.

Practical Guide for the Compilation of a TSA: Directory of Good Practices

The *Practical Guide for the Compilation of a TSA: Directory of Good Practices* (🔗) draws on EU Member States´ experiences on how to compile the TSA. It is a practical TSA implementation guide, based on the evaluation of country-specific TSA stocktaking reports.

The technical assistance missions carried out as part of a Eurostat funded project on fostering TSA implementation in the Member States provided an additional stimulus for the identification of further specific implementation practices. As a result, the Guide refers mainly to the TSA-RMF 2000 (the earlier version of RMF 2008 described in Chapter 8.8.1) and to the corresponding European Implementation Manual (TSA-EIM) which was published by Eurostat in 2001. Nonetheless, it includes comments on significant methodological changes introduced in the TSA-RMF 2008. Above all, it caters to compilers who are less experienced in national TSA compilation and professionals seeking practically orientated recommendations.

10.8.2 Linking the TSA and the SEEA

The *TSA-SEEA Technical Note* (🔗) was prepared by UNWTO, in collaboration with UNSD, under the auspices of the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA) and the UNWTO Committee on Statistics. It was welcomed by the UNSC at its March 2019 session. The Note describes approaches to linking information from the TSA and System of Environmental-Economic Accounting (SEEA) frameworks. It provides practical guidance for the measurement of environmental flows (water, energy, greenhouse gas emissions and solid waste) in the tourism industries. This work is part of the current Measuring the Sustainability of Tourism (MST) initiative of UNWTO supported by UNSD (discussed below).

The United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA) (see *Chapter 10.6.5*) has overseen the development of a number of technical notes relating to various components of the SEEA Central Framework, such as accounting for water, energy, air emissions, material flows, environmental protection expenditure and the environmental goods and services sector. The TSA-SEEA Technical Note follows the same general structure including the description of core accounts, discussion of indicators and provision of general compilation guidance.

10.8.3 Examples of national practice

The economic value of tourism to Australia's economy is estimated using the TSA. The resulting Australian Tourism Satellite Account (ATSA) is published annually and provides measures of tourism gross value added, tourism gross domestic product, tourism employment and tourism trade. It enables the government and industry to compare the value of tourism with other industries in the economy.

The Australian Bureau of Statistics produces the estimates at a national level (using inputs from the International Visitor Survey and National Visitor Survey) and Tourism Research Australia produces the state and regional estimates. The ATSA is funded by the Australian Trade and Investment Commission.

10.8.4 Further development

Measuring the Sustainability of Tourism

In 2015, the UNWTO, with the support of UNSD, initiated the programme of work entitled Measuring the Sustainability of Tourism (MST). The aim is to develop an international *Statistical Framework for Measuring the Sustainability of Tourism (SF-MST)*, including economic, environmental and social dimensions.

> By integrating tourism within economic, social and environmental measurement standards, the framework aims to provide a common language and to organize structure for exploiting the richness of data already available and for more effective data production, management and integration.

Such a standards-based framework supports the credibility, comparability and outreach of various measurement and monitoring programmes pertaining to sustainable tourism, including the derivation of SDG indicators. A number of countries have already participated in pilot studies and shared their experiences in the implementation of some aspects of the SF-MST.

It is expected that the SF MST will be presented to the UNSC for its endorsement.

6th UNWTO International Conference on Tourism Statistics: Measuring Sustainable Tourism

On the occasion of the International Year of Sustainable Tourism for Development 2017 (🔗), the Government of the Philippines and the UNWTO organized the 6th International Conference on Tourism Statistics (🔗) in Manila with the primary objective of addressing the issue of the Measurement of Sustainable Tourism.

One thousand five hundred participants from 88 countries, including ministers, chief statisticians, private sector representatives, and key decision-makers from international organizations discussed how to advance a rigorous, statistical approach to the measurement of sustainable tourism. The *Manila Call for Action* (🔗) was a culmination of this conference in which governments and administrations, international organizations, academia, the private sector and civil society, called for the

development and implementation of a Statistical Framework for Measuring Sustainable Tourism that includes economic, environmental and social dimensions across relevant spatial levels (global, national and sub-national)'.

The UNWTO Committee on Statistics

The UNWTO Committee on Statistics is a subsidiary advisory body of the UNWTO Executive Council and, as such, contributes to the fulfilment of Article 13 (3) of the agreement whereby UNWTO became a specialized United Nations agency. That agreement states: "The United Nations recognizes UNWTO as the appropriate organization to collect, to analyse, to publish, to standardize and to improve the statistics of tourism and to promote the integration of these statistics within the sphere of the United Nations system." The Committee is involved in the following:

- Proposing initiatives relating to the design and implementation of international standards on tourism statistics.

- Promoting the international comparability of tourism statistics by proposing initiatives relative to the collection, homogeneity, processing and dissemination of data.

- Helping member countries in their initiatives to improve their respective national systems of tourism statistics and in the development of TSAs, including the further development and clarification of methodological issues relating to tourism statistics and exploring future extensions of TSAs.

- Liaising with other international bodies with delegated responsibilities for leadership regarding and coordination of related international statistics and their standards within the sphere of the United Nations system.

Working Group of Experts on Measuring the Sustainability of Tourism

The Working Group of Experts on MST was established by the UNWTO's Committee on Statistics in collaboration with UNSD and works in coordination with the UNCEEA. The primary task of the Working Group is to develop the SF-MST and support its implementation in countries.

Expert Group on Tourism Satellite Account Compilation Guide

UNWTO, with the support of UNSD, set up an Expert Group on Tourism Satellite Account to lead the development of the Compilation Guide. It is the mandate of the Expert Group to draft the compilation guide, consult all stakeholders in this process and submit the guide to the UN Statistical Commission in the near future.

10.9 Health accounts

10.9.1 System of Health Accounts

Health care systems in all countries continue to evolve in response to changing demographics and disease patterns, rapid technological advances and more and more complex financing and delivery mechanisms. Common goals are equity, efficiency and effectiveness of care. A health account (HA) facilitates their achievement by reporting health expenditures using the current global standard, the *System of Health Accounts* (SHA 2011), which ensures a systematic description of the financial flows related to health care goods and services. The aim of SHA 2011 is to describe the health care system from an expenditure perspective both for international and national purposes. The standard was prepared by the International Health Accounts Team (IHAT), comprising the health accounts experts from three organizations: OECD, WHO and Eurostat. It is jointly maintained by these organizations.

> SHA 2011 provides a systematic description of the financial flows related to the consumption of health care goods and services. It sets out the boundaries, definitions and concepts of comparative health accounting. It enables tracking of all health spending including expenditures on health promotion, prevention, treatment, rehabilitation, palliative care and related ancillary, administration and governance services as well as provision of medical goods for residents of a given country over a defined period of time regardless of the entity or institution that financed and managed that spending.

SHA 2011 can be used as a monitoring and evaluation tool to track changes in policy priorities and to determine whether the introduction of reforms and new programs has resulted in changes in health resources allocation and expenditure.

The core tables in SHA 2011 address the following three basic aspects (and corresponding questions):

- the types of goods that are purchased and the kinds of services that are performed (what kinds of health care goods and services are consumed?);

- the sources of funding, the financing scheme(s) that pay(s) for these goods and services (where does the money come from?); and

- the providers that deliver health care goods and services (where does the money go?).

The ultimate goal of data compilation of the core accounts is to answer these three questions with respect to each transaction that incurs health care expenditure. Thus, the SHA 2011 is organized around a triaxial system for the health expenditure recording. It incorporates the *International Classification for Health Accounts (ICHA)*, which defines:

- **consumption**: health care by function (ICHA-HC), and related classifications;

- **financing**: financing schemes of health care (ICHA-HF), and related classifications;

- **provision**: health care service provider industries (ICHA-HP), and related classifications.

The entire mapping of health care system and its complex funding is a multi-dimensional process. Therefore, these three core classifications are complemented by additional classifications generally used in producing a health account, such as

- Revenues of health care financing schemes (ICHA-FS);

- Institutional units providing revenues of financing schemes (FS.RI);

- Financial Agents (ICHA-FA);

- Factors of health care provision (ICHA-FP);

- Diseases and conditions (DIS).

SHA 2011 distinguishes between the two indicators **current health expenditure** and **capital health expenditure** (ICHA-HK). Principles and classification for capital expenditures are borrowed from international standard, the 2008 SNA.

Existing national and international classifications, such as the International Standard Industrial Classification of All Economic Activities (ISIC), served as a starting point in defining the ICHA. WHO led a discussion on the updated version of COICOP 2018 in order to facilitate linkage to SHA2011. Disease and condition classification have a strong linkage with the International Classification of Diseases (ICD).

10.9.2 General guidelines and tools

The World Health Organization (WHO) is the international organization with primary responsibility for the Health accounts country platform (🔗). Through this platform (further described below), WHO provides countries with an accounting framework, guidelines, tools and technical support to institutionalize and set up a harmonized, integrated platform for timely collection of health expenditure data.

WHO has a mandate for health expenditure data at global level, as per the World Health Assembly (WHA) to establish and strengthen institutional capacity in order to generate country-level evidence and effective, evidence-based policy decision-making on the design of universal health coverage systems, including tracking the flows of health expenditures through the application of standard accounting frameworks.

Health in All Policies: Framework for Country Action

While the Health in All Policies (HIAP) Framework concerns health policy and not statistics per se, it provides the background within which health statistics are being developed and implemented.

The Framework provides countries with a practical means of achieving a coherent policy approach to health, particularly at the national level. It presents an approach to health-related rights and obligations. It improves the accountability of policymakers for health impacts at all levels of policymaking. It includes an emphasis on the consequences of public policies on health systems and determinants of health and well-being. It also contributes to sustainable development. It can

also be adapted for supranational level decision-making as well as at the local level. This is important as decentralisation of government functions has empowered local authorities in many areas.

In terms of take-up, as of mid-2020, some countries have already adopted a HIAP based approach, even though this may not be obvious. In other countries, the framework has yet to be operationalized.

Health Accounts Production Tool (HAPT)

For reducing the need for technical assistance, increasing local capacity and efficiency for health account production, the Health Accounts Production Tool (HAPT) was developed with input from the WHO and the World Bank. The tool is maintained by WHO and distributed free of charge. It guides health accounts' teams through the entire production process. Its key features are:

- step-by-step directions to help guide country teams through the health accounts estimation process;

- platform to manage complex data sets, reducing issues with missing data;

- survey creator and import function to streamline data collection and analysis;

- built-in auditing feature to facilitate review and correction of double-counting of expenditures;

- automation of the mapping of data;

- interactive diagram to help analysts visualize the flow of funding through the health sector; and

- automatically-generated health accounts tables and reports.

HAPT is a data management tool that has been developed for low- and middle-income countries for the development of health accounts in the standardised format of SHA 2011. HAPT is used in more than 60 countries around the world.

Health Accounts Analysis Tool (HAAT)

The Health Accounts Analysis Tool (HAAT) was developed and is maintained by the WHO. It guides health accounts teams through the analysis of health expenditure data by automatically producing relevant graphs and charts using the data entered into the HAPT. In 2021, after complex development, HAPT and HAAT will be combined in one common tool under the HAPT name. In addition, SHA 2011 is accompanied by several supportive documents produced by OECD, WHO and Eurostat. Each document aims to promote consistency of approach across countries in implementing SHA 2011. The key documents are summarised below:

Pilot exercises of SHA 2011: Lessons learned, (OECD, 2014)

During the latter stages of the process of revising SHA 1.0 to create SHA 2011, pilot testing of a preliminary draft of the new manual was conducted in a Member State of each WHO region and in a selection of OECD countries. The aim was to provide feedback and information on the appropriateness of the revised classifications and the overall feasibility of the new system. Participating countries were asked to test the various draft classifications of the new manual in different stages of development. The pilot testing results were used to refine the revision process.

This report *Pilot exercises of SHA 2011: Lessons learned* (🔗) provides a summary of the main lessons learned, consolidating the reports of the pilot countries together with exchanges with other countries. The inventory of problems found by the pilot teams, the solutions proposed, and the usefulness of the revised proposals for policy were discussed when clarification on selected subjects was required. The cross-classifications of the data provided were analysed for their internal and cross-classification consistency.

Indicator metadata registry (IMR), WHO

The Indicator metadata registry (IMR) is a central source of metadata of health-related indicators used by WHO and other organizations. It includes indicator definitions, data sources, methods of estimation and other information that allow users to get a better understanding of their indicators of interest. It facilitates complete and well-structured indicator metadata, harmonization and management of indicator definitions and code lists, internet access to indicator definitions, and consistency with other statistical domains. It promotes interoperability through the SDMX-HD indicator exchange format and allows the incorporation of appropriate international standards such as SDMX Metadata Common Vocabulary (MCV), the ISO 11179 Metadata Registry, Data Documentation Initiative (DDI) and Dublin Core (DCMES).

10.9.3 Guidelines and tools dealing with specific issues

Accounting and mapping of long-term care expenditure under SHA 2011, (2012, OECD)

Accounting for long-term care (LTC) under the SHA framework is one of the major issues affecting the overall comparability and usefulness of international health expenditure data. In the past, comparability of long-term care and, therefore, total health care expenditure figures were limited since the previous version of the SHA (SHA 1.0) allowed for multiple interpretations of the LTC definition and boundary. Much variance was thus triggered by the different national notions of LTC, for example, which ministry had responsibility for LTC or how LTC was financed.

Annex 1 of the document, entitled Additional guidance on LTC services provides examples of services with recommended accounting practices complementing the corresponding LTC paragraphs in SHA 2011.

Guidelines to measure expenditure on over-the-counter (OTC) drugs, (2012, OECD)

Drawing on current practices, the O*ECD Guidelines to measure expenditure on over-the-counter (OTC) drugs* (🔗) aim to assist countries in starting to report OTC drug expenditures, as well as helping others to improve their current methodology. Moreover, the Guidelines seek to enhance the exchange of experiences between countries so that the comparability, accuracy, reliability and policy relevance of pharmaceutical expenditure data can be improved.

The Guidelines describe a general approach, consisting of four areas:

- National legislation;
- Data sources;
- Mapping into the SHA categories; and
- Adjustments to the data.

These are complemented with further clarifications on the new definitions of OTC drugs presented in SHA 2011 together with information on how to capture recent developments in the OTC drug market, such as the intensification of patient mobility across borders and the diffusion of on-line purchases.

Implementing the capital account in SHA 2011, (2012, OECD)

Reflecting the distinct treatment of current and capital spending and in an effort to avoid some of the previous ambiguities surrounding capital spending, the SHA 2011 introduced a new separate chapter on the accounting of capital formation in health systems. The aim of the chapter - *Implementing the capital account in SHA 2011* (🔗) - is to provide a clearer definition of the aggregate capital formation in health care systems, while proposing a new for SHA breakdown of capital formation by the type of assets (i.e., infrastructure, machinery, etc.). Furthermore, a capital account has been developed in the chapter to allow the reporting not only of total expenditure on capital formation but also what sources have been used to fund the purchase of new assets.

In an effort to test the understanding and the feasibility of reporting the various components of the new capital account table, the OECD invited its member countries to participate in a study. Nine countries provided feedback on the various methodologies, data sources they currently use, or could feasibly use, in order to report the various items of the proposed capital account, as well as identifying those parts that they envisage would be problematic in their reporting. In addition to the country responses, the OECD investigated various national and international data sources currently available that would allow for additional reporting, and it analysed some aspects of the financing mechanism of capital acquisition, in particular for France and Germany.

Guidelines for the implementation of the SHA 2011 Framework for accounting health care financing, (2013, OECD)

The accounting framework for health care financing is a key component of SHA 2011. It makes health accounts more adaptable to rapidly evolving health financing systems, further enhances cross-country comparability of health expenditures and financing data and leads to improvement of the information base for the analytical use of national health accounts.

The *Guidelines for the implementation of the SHA 2011 Framework for accounting health care financing* (🔗), provide:

- a more detailed explanation of the various concepts, particularly concerning the role of the government in the health sector and foreign aid; practical approaches for preparing SHA data relevant to health care financing, together with possible methodologies that may be useful in the case of complex financing arrangements;

- a set of tools that health accountants can choose from, according to their specific needs.

Expenditure on prevention activities under SHA 2011: Supplementary guidance (2013, OECD)

A key criterion for inclusion under SHA 2011 is whether the primary purpose of the spending is health. Therefore, policies that address the wider determinants of health and have known impacts upon health, for example. Improving or increasing incomes, employment, housing, or active travel are considered outside the SHA boundary as they have another primary purpose. However, much of the public spending to improve occupational health and safety and environmental health, to prevent mortality and injuries in road and transport accidents, and to increase food safety, do fall within the boundary of prevention.

The document *Expenditure on prevention activities under SHA 2011: Supplementary guidance* (🔗) strives to better define the prevention boundaries in three ways: in relation to other health spending, health-related spending, and non-health spending. Thus, the legislative and regulatory process to increase health and safety, or curtail the advertising and promotion of hazardous behaviour, are considered part of health governance rather than spending on prevention per se; while the enforcement of such regulations is classed as health-related spending.

The costs of compliance with regulations by individuals and companies may have the purpose of avoiding the penalties for contravention, so any expenditure in this domain is also outside the boundary of prevention and health. Likewise, voluntary measures by individuals and companies may have a primary purpose other than health, and so are outside the boundary too. When their purpose is prevention, public health programmes and personal preventive healthcare services are within the prevention boundary, including when requested by patients – these include many forms of information, education, counselling and mass communication, plus immunisation, screening and check-ups. Pharmaceutical spending, including prophylactic medication and contraceptives, is classed with medical goods rather than preventive spending under SHA 2011.

- *Guidelines to Improve Estimates of Expenditure on Health Administration and Health Insurance* (🔗);

- *Guidelines for Improving the Comparability and Availability of Private Health Expenditures* (🔗);

- *Feasibility and Challenges of Reporting Factors of Provision in SHA 2011* (🔗);

- *Improving Estimates of Exports and Imports of Health Services and Goods* (🔗);

10.9.4 Examples of national practice

The *Philippine National Health Accounts (PNHA)* is one of the satellite accounts being produced by the Philippine Statistics Authority (PSA). It presents data on the country's health spending, health financing and health management over a defined period of time. Early compilation of PNHA used local estimation methodologies approved by PSA Board in 2011. The country adopted SHA 2011 in 2016 and officially released PNHA-SHA estimates for 2014 to 2016 in 2017. From then on, PSA annually compiles PNHA-SHA.

The latest release of PNHA-SHA for 2016 to 2018 generated the following tables:

- Current Health Expenditures by Revenues of Health Financing Schemes;

- Current Health Expenditures by Institutional Units Providing Revenues to Financing Schemes;

- Current Health Expenditures by Financing Agent;

- Current Health Expenditures by Health Care Financing Scheme;

- Current Health Expenditures by Health Care Providers;

- Current Health Expenditures by Factors of Health Care Provision;

- Health Capital Formation Expenditures;

- Current Health Expenditures by Health Care Function;

- Current Health Expenditures by Income Quintile Group;

- Current Health Expenditures by Disease Group;

- Current Health Expenditures by Age and Sex Group;

- Current Health Expenditures by Region;

- Total Health Expenditures.

10.9.5 Further developments

The basic aim of the WHO Health Accounts Country Platform ($\mathcal{O}$) is to institutionalize a harmonized country platform for annual and timely collection of health expenditure data, with a particular focus on the distribution of expenditure by disease and health functions. It strengthens the capacity of country health account teams to report health expenditures using SHA 2011 and to analyse and produce policy-relevant reports.

Most EU Member States and OECD countries have implemented the SHA 2011 framework. Many WHO Member States are also implementing the SHA 2011 standard or initiating the process. OECD, Eurostat and WHO will continue to support the SHA 2011 implementation by providing training and technical assistance.

10.10 Gender Statistics

10.10.1 Context: the need for gender statistics

Beijing Declaration and Platform for Action, 1995, United Nations

> The Beijing Declaration and Platform for Action ($\mathcal{O}$) was adopted at the Fourth World Conference on Women and held in Beijing in 1995. It recommended that national, regional and international statistical services should ensure that statistics related to individuals are collected, compiled, analysed and presented by sex and age and reflect problems, issues and questions related to women and men in society.

Twenty-five years on, its stature and significance as a roadmap for the achievement of gender equality remain undiminished. This pivotal document continues to guide the global struggle against constraints and obstacles to the empowerment of women around the world. It underpins the formulation of a framework for gender statistics.

It identifies 12 domains:

Women in power and decision-making

Institutional mechanisms

Human rights of women

Women and the media

Women and the environment

The girl child

The 2030 Agenda for Sustainable Development

> Achievement of gender equality is also inextricably linked and contributes to all spheres of the 2030 Agenda for Sustainable Development (🔗). Goal 5 explicitly calls for gender equality and empowerment of women and girls, and around one-third of the 231 SDG indicators, covering 14 different goals, are identified as gender-relevant by the Inter-Agency and Expert Group on Gender Statistics. Thus, countries are asked to provide sex-disaggregated data wherever applicable when reporting on the progress made towards achieving the Sustainable Development Goals.

In addition to the *Beijing Declaration and 2030 Agenda*, national development strategies create new demands for gender statistics. Policymakers, researchers and advocates voice the need for more high-quality gender data and argue that the gender perspective should be a basic guiding assumption to plan, formulate and monitor inclusive and evidence-based policies and programmes at the national level. In 2010 the UNECE and the World Bank prepared *Developing Gender Statistics: A Practical Tool* (🔗). This manual (which is further discussed in *Chapter 10.10.4 — Guidelines for the production and use of gender statistics*) guides statistical organizations in the production and public use of statistics.

10.10.2 Concepts and definitions

> Gender statistics are defined as statistics that adequately reflect the differences and (in)equalities in the situation of women and men, girls and boys.

They cover a broad diversity of topics and issues, reflecting the ever-changing roles of women and men in society and public life, in the economy, and in families and households. They help policymakers to formulate policies and plans, monitor changes, and inform the public.

More specifically, gender statistics should reflect gender issues, that is, questions, problems and concerns related to all aspects of women's and men's lives, including their specific needs, opportunities and contributions to society. In every society, there are differences between what is expected, allowed and valued in a woman and what is expected, allowed and valued in a man. These differences have a specific impact on women's and men's lives throughout all life stages and determine, for example, differences in health, education, work, family life or general well-being. Producing gender statistics entails disaggregating data by sex and other characteristics to reveal those differences or inequalities and collecting data on specific issues that affect one sex in particular or relate to gender relations between women and men.

As noted in Integrating a *Gender Perspective into Statistics, 2016, UN* (🔗), concepts and definitions used in data collection must be developed in such a way as to ensure that the diversity of various groups of women and men and their specific activities and challenges are captured. In addition, data collection methods that induce gender bias in data collection, such as underreporting of women's economic activity, underreporting of violence against women and undercounting of girls, their births and their deaths should be avoided.

In summary, gender statistics are defined by the sum of the following characteristics:

- Data are collected and presented by sex as a primary and overall classification;

- Data reflect gender issues;

- Data are based on concepts and definitions that adequately reflect the diversity of women and men and capture all aspects of their lives;

- Data collection methods take into account stereotypes and social and cultural factors that may induce gender bias in the data.

Difference between 'gender' and 'sex'

Confusion between 'sex' and 'gender' still persists among both producers and users of statistics. The difficulty of translating the term gender from English into other languages further contributes to the confusion. Sometimes categories of sex (male and female) and gender (masculine and feminine) are treated as if they were the same thing. However, the word 'sex' refers to biological differences that define persons as women and men. Biological differences are relatively fixed and tend not to vary across cultures or over time. 'Gender', meanwhile, refers to socially constructed differences in the attributes and opportunities associated with being female or male, and to social interactions and relationships between women and men. Gender determines what is expected, allowed and valued in a woman, or man and should be further measured in the broader context of gender identity[1].

When data on demographic, social or economic characteristics are collected in the field, it is the sex of a person that is recorded, e.g., as female (woman) or male (man), not the gender. However, when analysed, data disaggregated by sex can reveal differences and (in)equalities in women's and men's lives that are the result of gender roles and expectations.

Analytical framework

There is no single overarching analytical framework for gender statistics. However, there are international guidelines for their production and use (as elaborated in the next section) and there are commonly held strategic objectives to expand gender statistics to cover all the important issues and to integrate them into mainstream statistical production.

10.10.3 Indicator frameworks and guidelines for production and use of gender statistics

Global Minimum Set of Gender Indicators, 2013, UNSD

The *Global Minimum Set of Gender Indicators* (🔗) was agreed by the UNSC in 2013 as a guide for national production and international compilation of gender statistics. It is a collection of 52 quantitative indicators and 11 qualitative indicators covering national norms and laws on gender equality. It includes indicators covering domains such as education, employment, health, the human rights of women and girls, and public life and decision-making.

The choice of indicators was guided by the primary criterion that indicators should address key policy concerns as identified in the Beijing Platform for Action and other more recent international commitments. The list of Minimum Set of Gender Indicators has been revised to be fully aligned with the SDG indicators.

Indicators of Gender Equality, 2015

This *UNECE publication Indicators of Gender Equality* (🔗) is recommended for use in countries participating in the Conference of European Statisticians (CES). It was developed by a CES task force and endorsed by CES in October 2014. It presents a set of 115 gender equality indicators. The criteria for selection were that an indicator:

- clearly addresses a relevant policy issue related to gender equality and/or women's empowerment;

- is relevant to the CES member countries;

- is conceptually clear, easy to interpret, and has an agreed international definition;

- is sensitive to changes, and changes in the value of the indicator have a clear and unambiguous meaning;

- is feasible, robust and reliable;

- is comparable over time and enables international comparison.

The indicators are grouped into eight thematic domains inspired by the Beijing Platform for Action and categorized into **42 headline indicators and 73 supporting indicators**.

- The **headline indicators** cover the essential aspects. Their purpose is to provide simple and clear information to decision-makers, and the public about progress towards internationally agreed gender-related policy objectives.

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[1] In recent years, there has been a new call for data on sexual orientation and gender identity (SOGI), and a few countries have been testing initiatives for identifying, defining and measuring SOGI across populations, including the non-binary and transgender individuals. Research on expanded questions on sex and gender has been conducted quite intensively by national statistical offices in Australia, New Zealand, Canada, the United Kingdom and the United States (United Nations, 2019).

- The **supporting indicators** provide further information on more specific aspects of gender equality. They are valuable to achieve a deeper comprehension of the phenomenon.

The indicator set is fully aligned with the *Global Minimum Set of Gender Indicators*.

Gender Statistics, ESCAP

The core set of gender indicators for Asia and the Pacific (🔗) developed by ESCAP adapts and extends the global minimum set of gender indicators to focus on the key issues for gender equality in the region. This core set is providing a basis for national policy development and for measuring and monitoring progress towards the achievement of gender equality and other global gender-related goals.

ESCAP also seeks - in the longer term - to assist the Member States through a regional programme on gender statistics (🔗), to build their capacity to collect the gender-sensitive data required to provide the proper foundation for such indicators.

CARICOM GEI, CARICOM RSP and UN Women Multi-Country Office - Caribbean

The CARICOM Regional Statistics Programme (RSP) and the UN Women Multi-Country Office (🔗) – Caribbean launched a collaborative endeavour in early 2015. The main goal of this initiative was to develop a set of CARICOM gender equality indicators (GEI) parallel to the global Minimum Set of Gender Indicators described in *Chapter 10.10.3 — Indicator frameworks and guidelines for production and use of gender statistics Minimum Set of Gender Indicators, 2013, UNSD* to identify, assess, measure and track persistent gender equality concerns and disparities across the CARICOM region, in accordance with the newly adopted SDGs. The CARICOM GEI framework was validated, and the indicators agreed upon at the 40th meeting of the Standing Committee of Caribbean Statisticians (SCCS) in 2015. In 2017, the CARICOM GEI were piloted in Dominica, Grenada, Jamaica and Suriname.

10.10.4 Guidelines for the production and use of gender statistics

Developing Gender Statistics: A Practical Tool, 2010

The UNECE and World bank publication *Developing Gender Statistics: A Practical Tool* (🔗) aims to guide statistical organizations in the production and use of gender statistics. It presents a consolidated reference for any organization or individual interested in producing information about gender differences, guides producers of gender statistics and assists in improving the availability of high-quality information on women and men.

United Nations Guidelines for Producing Statistics on Asset Ownership from a Gender Perspective, 2018

The *UN Guidelines for Producing Statistics on Asset Ownership from a Gender Perspective* (🔗), prepared by the UNSD and UN Women provides national statistical agencies and policymakers with guidance on collecting, processing, analysing and disseminating individual-level data on asset ownership to inform three broad sets of policy issues: fostering the empowerment of women; reducing poverty and vulnerability; and understanding livelihoods.

The Guidelines introduce concepts, definitions and data requirements for measuring asset ownership from a gender perspective in household surveys and provide guidance on planning, organizing and implementing a household survey, appending a module, or adding a minimum set of questions on asset ownership to a nationally representative household survey. National statistical offices may choose a particular modality for the implementation of the recommendations, depending on their own needs and capabilities, including the needs of data users and the availability of data from other sources, such as administrative records.

The associated e-learning course (🔗) translates key concepts and recommendations from the Guidelines in an interactive manner. The course covers the conceptual framework, data sources, implementation guidance and data processing, analysis and dissemination.

United Nations Guide to Producing Statistics on Time Use: Measuring Paid and Unpaid Work, on-going, UNSD

Since 2018, the UNSD and the Expert Group on Innovative and Effective Ways to Collect Time-Use Statistics have been working towards the implementation of the International Classification of Activities for Time-Use Statistics (ICATUS 2016) and the modernization of time-use surveys, in the context of updating the Guide to Producing Statistics on Time

Use: Measuring Paid and Unpaid Work and with the overall objective of further promoting this critical data collection across countries and over time.

The updated Guide aims to provide national statistical offices and policymakers with recommendations and best practices for collecting, processing, analysing and disseminating time-use statistics to inform research and the development of a broad range of policies, including on unpaid work and non-market production, well-being and gender equality. The guidelines will introduce key concepts and definitions related to time-use data and provide national statistical offices with advice on the different phases and processes to follow (data needs, design, build, collect, process, analyse, disseminate and evaluate) when implementing a household survey or appending a module on time-use to a nationally representative household survey. By exploring ways to modernise the collection of time-use data, including through the use of technology, the guidelines will ensure that national statistical offices have access to a sustainable model to institutionalize the systematic collection of those data. The updated Guide will build on the *Guidelines for Harmonizing Time-Use Surveys*, published by the Economic Commission for Europe in 2013 (🔗).

10.10.5 Using gender statistics: examples of assessments of progress towards gender equality

Turning promises into action: gender equality in the 2030 Agenda for Sustainable Development, 2018

The flagship report on *Turning promises into action: gender equality in the 2030 Agenda for Sustainable Development* (🔗), by UN Women, monitors global and regional trends in achieving the SDGs for women and girls based on available data, and it provides practical guidance for the implementation of gender-responsive policies and accountability processes. As a source of high-quality data and policy analysis, the report is a key reference and accountability tool for policymakers, women's organizations, the UN system, and other stakeholders. It lays the basis for robust, gender-responsive monitoring of the 2030 Agenda for Sustainable Development by:

- showing how gender equality is central to the achievement of all 17 SDGs and arguing for an integrated and rights-based approach to implementation;

- explaining gender data gaps and challenges for robust monitoring and establishing starting points and trends across a range of gender-related indicators based on available data;

- providing concrete guidance on policies to achieve two strategic targets under SDG 5 (violence and unpaid care) and outlining how these policies are synergistic with other goals and targets; and

- setting an agenda for strengthening accountability for gender equality commitments at global, regional, and national levels.

Women and the Sustainable Development Goals (SDGs), 2019, UN Women

Women and the Sustainable Development Goals (SDGs), by UN Women, showcases the above report (Turning promises into action.) It stresses that gender equality is a right and fulfilling this right is the best chance of meeting some of the most pressing current challenges, from the economic crisis and lack of health care, to climate change, violence against women and escalating conflicts. Women are not only more affected by these problems, but also possess ideas and leadership to solve them.

Progress of the World's Women 2019-2020 Families in a changing world, UN Women

The *UN Women report on Progress of the World's Women 2019-2020 Families in a changing world* (🔗) assesses the reality of families in the context of sweeping economic, demographic, political, and social transformation. The report features global, regional, and national data. It also analyses key issues such as family laws, employment, unpaid care work, violence against women, and families and migration. It relies on a broad array of available data as of March 2019, gathered from national sources, and compiled and harmonized by international agencies.

The World's Women reports, UNSD

The *UNSD World's Women reports* (🔗) are prepared at five-year intervals. The first was in 1990. The first three and 2010 edition analyse women's situation compared to men's worldwide in a broad range of fields. The 2005 edition reviews

and analyses national capacity to collect and report sex-disaggregated data on socioeconomic topics relevant for addressing gender concerns. The most recent, 2015 edition comprises eight chapters covering critical areas of policy concern: population and families, health, education, work, power and decision-making, violence against women, environment, and poverty. In each area, a life-cycle approach is introduced to reveal the experiences of women and men during different periods of life-from childhood and the formative years, through the working and reproductive stages, to older ages.

Selected Statistics about Women and Men in Suriname, General Bureau of Statistics

The publication commenced in 2002 with 37 indicators under the name '*Selected Gender Statistics*'. In 2017 (after piloting the CARICOM Gender Equality Indicators) the name was changed to '*Selected Statistics about Women and Men in Suriname*' (🔗). The statistics have been published in all the odd years since 2005 and included 142 indicators in 2019. The publication is one of the outputs of a UNSD/CARICOM Project (which became a CARICOM Program) on Strengthening Capacity in the Compilation of Statistics and Indicators for Conference Follow-up. Indicators are grouped under various headings, e.g., Education, Population, Health, Employment and Unemployment, Public Governance and Crime. Gender Statistics (odd years) and Environment Statistics (even years) are the responsibility of the Research and Planning Division of the General Bureau of Statistics of Suriname.

10.10.6 Examples of national practices

Standard Question Modules for Sex and Gender, Australian Bureau of Statistics

The *Australian Bureau of Statistics Standard Question Modules for Sex and Gender* (🔗) specifies the mandatory elements and the allowable variations and optional inclusions in asking the questions 'What is your sex?' and 'What is your gender?'

Gender workplace statistics at a glance, Australia

The *Gender workplace statistics at a glance* (🔗) publication by the Australian Workplace Gender Equality Agency brings together statistics from a variety of sources on women's workforce participation, economic security, educational attainment, paid parental leave and leadership roles.

Guidance for questions on sex, gender identity and sexual orientation for the 2019 Census Rehearsal for the 2021 UK Census

The UK Office for National Statistics has provided *Guidance for questions on sex, gender identity and sexual orientation* (🔗) for the 2019 Census Rehearsal, accompanied by a summary of the research that informed the drafting of the guidance.

Gender-based Analysis plus (GBA+), Statistics Canada

GBA+ is an analytical process used in Canada to assess the differential effects of policies, programs, and legislation on diverse groups of women, men, and people of all sexual orientations, gender identities and expressions. In 2015, the Government of Canada strengthened the application of GBA+ across federal governments to support the development of evidence-based policies and programs that benefit everyone in the country. GBA+ also provides the foundation for gender-based budgeting, to ensure the effects of budget proposals on different groups of people are understood and addressed through more effective and inclusive priority setting and decision making. Statistics Canada is supporting GBA+ and gender-based budgeting by providing data disaggregated by sex, gender and other intersecting characteristics and quantitative analyses on a broad range of social, economic and environmental subject matter areas. To fill these roles, Statistics Canada created the Centre for Gender, Diversity and Inclusion Statistics (🔗) in 2018.

The Gender Equality Barometers, Statistics Finland

Coordinated by the Centre for Gender Equality Information, a national information service that provides information related to gender equality and gender studies, and conducted by Statistics Finland, the Gender Equality Barometers provide information on opinions, attitudes and experiences related to gender equality in various areas of life in Finland. They enable monitoring the development of gender equality in different sectors of Finnish society.

Gender Statistics Program, Uganda Bureau of Statistics

The Uganda Bureau of Statistics (UBS) has developed a comprehensive gender statistics program (🔗). One of the starting points was the *National Governance Peace and Security Survey 2017* (🔗), which was a baseline survey of perceptions on violence against women, women's economic empowerment and women's political participation and leadership.

10.10.7 Further Development

There are several international programmes aimed at further development of gender statistics and their integration within the regular statistics produced by NSOs. In this subsection, programmes that primarily focus on further development guidelines and indicators are described. The following section (*Chapter 10.10.8 — Mainstreaming a gender perspective into official statistics*) discusses programmes specifically promoting integration of gender statistics into regular statistical programmes.

UN Global Gender Statistics Programme (GGSP)

The Global Gender Statistics Programme (🔗) is mandated by the United Nations Statistical Commission (UNSC), implemented by the United Nations Statistics Division (UNSD) and partners, and coordinated by the Inter-Agency and Expert Group on Gender Statistics (IAEG-GS). The Programme encompasses:

- improving coherence among existing initiatives on gender statistics through international coordination;

- developing and promoting methodological guidelines in existing domains as well as in emerging areas of gender concern;

- strengthening national statistical and technical capacity for the production, dissemination and use of gender-relevant data; and

- facilitating access to gender-relevant data and metadata through the minimum set of gender indicators for national production and international compilation (adopted in 2013 by the UNSC).

Inter-Agency and Expert Group on Gender Statistics (IAEG-GS)

The Inter-Agency and Expert Group on Gender statistics (IAEG-GS) brings together representatives of international agencies within and outside United Nations system, statisticians from national statistical systems, and development partners, to review progress and provide guidance on future activities geared at advancing gender statistics. The United Nations Statistics Division (UNSD) is the secretariat of the group. The IAEG-GS is mandated by the UNSC to:

- serve as the coordination mechanism for the Global Gender Statistics Programme;

- provide guidance for the development of manuals and methodological guidelines for the production and use of gender statistics.

The IAEG-GS was first convened in 2006, meets annually and functions through advisory groups. The Group reviews methodological developments to measure and monitor gender indicators, shares best national practices in measuring and monitoring gender equality and takes stock of on-going and planned activities on gender statistics to improve coherence among existing and planned global and regional initiatives on gender statistics.

UNSD organizes **Global Fora on Gender Statistics** biannually under the Global Gender Statistics Programme and the guidance of the IAEG-GS. The Fora bring together producers and users of gender statistics from national and international statistical offices, other government agencies, international organizations, academia, civil society and the donor community to discuss and exchange best practices and innovations implemented across the globe to improve gender data and evidence for gender policies.

UNECE Steering Group on Gender Statistics

The objective of the UNECE Steering Group on Gender Statistics (🔗) is to provide direction to the Conference of European Statisticians (CES) work on gender statistics, to advance methodological work, capacity development, and collaboration between users and producers of gender statistics, and to follow up the implementation of CES guidance. The Steering Group:

- coordinates the CES work on gender statistics;

- launches and steers the development of guidelines and surveys of best practice;

- oversees the work of CES task forces in the area of gender statistics;

- follows up the implementation of CES methodological guidance related to gender statistics in UNECE countries;

- acts as an organizing committee for UNECE Work Sessions on Gender Statistics;

- advises the UNECE Secretariat on the formulation and planning of capacity-development activities to support the integration of a gender perspective into statistical systems in countries of Eastern Europe, Caucasus and Central Asia;

- promotes the use of UNECE training materials in gender statistics; and

- advances collaboration between users and producers of gender statistics.

10.10.8 Mainstreaming a gender perspective into official statistics

Integrating a Gender Perspective into Statistics, 2016

While many countries are attempted to establish or have succeeded in establishing sound gender statistics programmes, additional guidance is needed to improve the availability of data and to ensure a proper mainstreaming of gender issues in all areas of official statistics. This *UNSD manual Integrating a Gender Perspective into Statistics* (🔗), which is targeted primarily at statisticians working in less developed NSSs, provides information needed to accomplish three main goals:

- to achieve comprehensive coverage of gender issues in data production activities;

- to incorporate a gender perspective into the design of surveys or censuses, by taking into account gender issues and avoiding gender biases in measurement; and

- to improve data analysis and data presentation and to deliver gender statistics in a format that is easy to use by policymakers and planners.

Mainstreaming a gender perspective in statistics means that gender issues and gender-based biases are systematically taken into account in the production of all official statistics and at all stages of data production. Gender statistics produced as an 'add-on' are often marginalized and may not reach the full range of potential users, including policymakers in domains other than gender equality, analysts and researchers. Moreover, their production may be more dependent on irregular funding. Mainstreaming may also lead to more efficient coverage of gender issues and better coordination among data collection programmes in producing gender statistics.

- **Leadership**: mainstreaming a gender perspective requires political will at all levels, throughout the NSS. Sensitizing and raising the awareness of both users and producers of data is critical in linking gender statistics to policies. NSO heads should be fully involved in the required capacity-building and leadership.

- **Legal framework**: of crucial importance to improving the availability of gender statistics is the specification of formal requirements for sex-disaggregation and the incorporation of a gender perspective within the national statistical legislation that regulates the production and dissemination of official statistics. Requirements need to be established not only for statistics officially collected by the NSO but also for other NSOs and even organizations in the private sectors.

- **Cooperation between users and producers of statistics**: efforts should be made to promote dialogue and understanding between statisticians and the various users of statistics -policymakers, representatives of non-governmental organizations, activists and researchers. This enables data users to understand, gain access to and use gender statistics more effectively and help to increase the capacity of statisticians to identify and understand gender issues and to produce and communicate data that better address user needs.

- **Collaboration in developing and improving concepts and methods**: NSO need to work with international and regional organizations and agencies and academic and research institutions to mainstream gender in the development and revision of concepts, definitions and methods of collecting data. This collaboration extends to all methodological issues, including the design of survey questionnaires or modules within questionnaires, the revision

of international classifications and standards and the development of analytical methods and appropriate indicators, among others.

- **Training**: statisticians should be trained in how to incorporate a gender perspective into their regular work, from the design of data collection tools and fieldwork to data analysis and presentation. In particular, producers of statistics need to be trained to become more proactive in making the value of gender statistics visible to Governments, the public and other stakeholders.

- **Refocusing the activities and position of gender units and gender focal points**: while many countries have embarked on gender statistics programmes, the activities, and the roles of gender units and focal points have often been narrowly focused on the compilation and dissemination of sex-disaggregated data. NSOs should ensure that gender units are more involved in assessing the relevance for policymaking and quality of the statistics produced, and that they are under the direct supervision of a staff member at the director level.

Making Every Girl and Woman Count, UN Women

The programme implemented by UN Women and partners Making Every Girl and Woman Count (🔗) aims to bring about a radical shift in how gender statistics are created, promoted and used. It addresses the urgent need to increase the availability of accurate information on gender equality and women's rights in order to inform policy and decision-making. Through this ground-breaking public-private initiative, UN Women and its partners support countries to improve the production, accessibility and use of gender statistics.

Evidence Data for Gender Equality (EDGE), UNSD and UN Women

The Evidence Data for Gender Equality (EDGE) project was a joint initiative of the UNSD and UN Women that sought to improve the integration of gender issues into the regular production of official statistics for better, evidence-based policies. The Project accelerated existing efforts to generate internationally comparable gender indicators on health, education, employment, entrepreneurship and asset ownership in four key ways:

- developing an online interactive platform to disseminate gender-relevant data and metadata on education, employment, health and other dimensions in the Minimum Set of Gender Indicators;

- developing methodological guidelines on measuring asset ownership from a gender perspective that was presented to the UNSC in 2017;

- developing a conceptual framework and related indicators for measuring entrepreneurship from a gender perspective; and

- providing technical support to countries to implement the EDGE methodological guidelines – an e-learning course is available (🔗).

To achieve these goals, the Project worked with NSOs, regional commissions, and international agencies, including the Asian Development Bank (ADB), the African Development Bank (AfDB), the Food and Agriculture Organization of the United Nations (FAO), the International Labour Organization (ILO), the Organization for Economic Co-operation and Development (OECD) and the World Bank.

The Project was guided by a Steering Committee composed of members of the IAEG-GS.

Supporting Gender Statistics, 2019, Paris21 and UN Women

The SDGs, especially SDG5, call on all countries to achieve gender equality and the empowerment of all women and girls by 2030. This will be possible only if the depth and scope of the issues are understood, and the impact of interventions can be measured. Current gaps in gender statistics make it difficult to obtain the full picture of the different roles that men and women play in society.

One of the main reasons for gender data gaps is the limited national capacity to produce and effectively communicate gender statistics. In fact, only 13% of countries have budgets dedicated to gender statistics. Further, donor commitments to statistics do not sufficiently address gender issues. According to the 2019 PARIS21 Press report, only 13% of multilateral donor-funded statistical development projects include activities in gender statistics, and these activities represent only 8% of the total budgets of all projects reported.

Against this backdrop and in the framework of the Making Every Woman and Girl Count Programme, PARIS21 and UN Women are collaborating to increase the production and wider use of gender statistics (⊘) in line with national priorities and the 2030 Agenda on Sustainable Development. The collaboration focuses on four main activities.

- Improving coordination and planning for gender statistics through the development of an assessment framework and tools to identify reasons for gender statistics gaps relating to the capacity of national statistical systems.

- Improving data dissemination and communication of gender statistics through media engagement and data visualisation trainings and brokering user-producer partnerships through dialogues.

- Reporting the use of gender-specific data: currently, PARIS21 is building a methodological base for conducting text analysis methodology in the use of gender-specific data in newspapers, national development plans (NDPs) and select policy documents to measure citizen's use and actual policy uses.

- Reporting of financial resources for gender statistics through the *Paris 21 Partner Report on Support to Statistics* (PRESS). The report presents data on technical and financial support to statistical development worldwide and thus is a valuable tool for collaboration between donors and recipient countries. The PRESS report has included a section dedicated to support to gender statistics since its 2018 edition.

CARICOM gender equality indicators

Gender mainstreaming is one of the strategic drivers of the *CARICOM Regional Strategy for the Development of Statistics (RSDS) 2019–2030*, which was approved by CARICOM heads of government in July 2018. The *CARICOM Gender Equality Indicators* (GEI) were adopted as a tool within the RSDS. The RSDS includes the following directions:

- Mainstream gender issues and concerns in the development and implementation of the RSDS, ensuring that the production and dissemination of gender statistics are both integrated into different sections of the strategy, and is a key objective in itself.

- Advance the incorporation and systematising of a programme on gender statistics, including data production and dissemination mechanisms to monitor progress using CARICOM Gender Equality Indicators.

- Ensure consistent sex disaggregation of SDG related data wherever possible and embed sex-disaggregated estimates into regular reporting cycles of the regional and international statistical systems.

- Develop and implement specialised surveys, as needed, to capture issues of gender equality and women's empowerment across the region, including the conduct of gender-based violence surveys for the monitoring and evaluation of the achievement of gender equality commitments.

- Facilitate training of statisticians and experts in gender analysis and the interpretation and use of gender statistics.

- Enable collaboration and networking of gender experts and statisticians to promote and sustain a focus on gender in the production, analysis, dissemination, and use of statistics.

- Promote dialogue between gender data users and producers to ensure gender statistics meet users' expectations and are widely used for policymaking and advocacy.