

# Guidelines on International Classifications for Agricultural Statistics



United Nations



Food and Agriculture  
Organization of the  
United Nations

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# **Guidelines on International Classifications for Agricultural Statistics**

**December 2015**



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# Acronyms

ASFIS	List of Species for Fishery Statistics Purposes
COFOG	Classification of the Function of Government
COICOP	Classification of Individual Consumption According to Purpose
CPC	Central Product Classification
CWP	Coordinating Working Party on Fisheries Statistics
EG	Expert Group on International Statistical Classifications
EGM	Expert Group Meeting
ESS	FAO Statistics Division
FIPS	FAO Statistics and Information Branch of the Fisheries and Aquaculture Department
FCL	FAOSTAT Commodity List
GRT	Gross Register Tonnage
HS	The Harmonized Commodity Description and Coding System (Harmonized System)
HSC	Harmonized System Committee
HS-RSC	Harmonized System Review Sub-Committee
IC	International Classification
ICSE	International Classification by Status in Employment
IO	International Organization
IS	Individual Services
ISCO	International Standard Classification of Occupations
ISCED	International Standard Classification of Education
ISCED – A	International Standard Classification of Education – Classification of Educational Attainment
ISCED – F	International Standard Classification of Education – Fields of Education and Training
ISCED – P	International Standard Classification of Education – Classification of Education Programmes
ISIC	International Standard Industrial Classification of All Economic Activities
ISO	International Organization for Standardization
ISSCAAP	International Standard Statistical Classification for Aquatic Animals and Plants
ISSCFC	International Standard Statistical Classification of Fishery Commodities
ISSCFG	International Standard Statistical Classification of Fishing Gear
ISSCFV	International Standard Statistical Classification of Fishery Vessels
ILO	International Labour Organization
LCCS	Land Cover Classification System
LCC	Land Cover Classification
LUC	Land Use Classification
NC	National Classification
NPISH	Non-Profit Institutions Serving Households
NSO	National Statistical Office
NSS	National Statistical System
ODA	Official Development Assistance
RC	Regional Classification
RO	Regional Organization
SEEA	System of Environmental-Economic Accounting
SITC	Standard International Trade Classification
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNSC	United Nations Statistics Commission
UNSD	United Nations Statistics Division
WCA	World Programme for the Census of Agriculture
WCO	World Customs Organization
WHO	World Health Organization

# Preface

These Guidelines were developed within the framework of the Global Strategy to Improve Agricultural and Rural Statistics. In particular, the publication was compiled by the Statistics Divisions of the Food and Agriculture Organization of the United Nations (FAO) in cooperation with the United Nations Statistics Division (UNSD), as the result of several years of close collaboration between the two Organizations in this field and of FAO's participation in the Expert Group on International Statistical Classifications.

The Guidelines are functional to the implementation of the Global Strategy's core principles, thanks to the key role played by international statistical classifications in promoting the integration of agriculture into national statistical systems and the inclusion of countries in global statistical activities. The publication also aims to support countries' capacity development and to facilitate their participation in the international governance mechanisms of standards and classifications, thus ensuring the sustainability of agricultural statistics worldwide.

The Guidelines bring together comprehensive information on statistical classifications, in particular those used for agricultural statistics, and provide a convenient reference framework for the application of international standards at national level. The Guidelines were drafted following a capacity development approach, and have been conceived as a practical tool that would be easy to apply. Some best practices and experiences from countries and regions are also presented in the Annex to this publication.

# Acknowledgments

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# Introduction

The primary purpose of international statistical classifications is to provide a **framework** for the collection and analysis of data and for the presentation and comparison of official statistics at international level. Indeed, statistical classifications can be used to **standardize** statistical information, **aggregate** and **disaggregate** data sets in a meaningful way, and **support policy** and **decision-making**. They function as “international languages” for communicating in statistics (UNSD, n.d.-c).

International statistical classifications are essential mechanisms for the **harmonization** and **coordination** of data compilation worldwide. They enable the comparison of national data and indicators with those of other countries at global level, thus facilitating the **inclusion** of countries in global statistical activities and benchmarking of performance.

The International Organization for Standardization (ISO) defines international standards as follows:

“[s]tatistical standards are usually documents established by consensus and approved by a recognised body that provides for common and repeated use, rules, guidelines for activities or their results, aimed at the achievement of the optimum degree of order in a given context.” (ISO, 1996)

International standards should be taken as points of reference for the development of national and regional schemes. To enable uptake at country level, they can be **adapted** (consistently with the relevant international classification framework) to suit the country’s requirements and its statistical needs.

Principle 9 of the UN Fundamental Principles of Official Statistics states:

“[t]he use by statistical agencies in each country of international concepts, classifications and methods promotes the **consistency** and **efficiency** of statistical systems at all official levels.”

This is particularly relevant in a world in which globalization increases the need for the interconnectedness and integration of production processes, communication and technologies – including the statistical world – to produce consistency and efficiency in all areas of life.

As reported by the United Nations Statistics Division (UNSD):

“[w]hen international reference standards are not employed, national statistical offices risk their data not being comparable with those of other countries and miss out an opportunity to see how their statistical indicators compare with overall world development. They forego the opportunity to promote their data, and subsequently their country, when their data cannot be published within internationally recognizable frameworks.” (UNSD, n.d.-c)

Statistical classifications have been on the agenda of the **United Nations Statistical Commission (UNSC)**<sup>1</sup> – the apex body of the global statistical system – ever since its inception in 1947. Almost seventy years ago, therefore, the founders of the UNSC affirmed the need for international classifications to receive “urgent consideration”, to make “statistics compiled by different countries more comparable” (UNSC, 1947).

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<sup>1</sup> For further information on the UNSC, see the official webpage: “UN Statistical Commission” <http://unstats.un.org/unsd/statcom/commission.htm>.

Today, the implementation of international classifications at global scale remains a priority for many statistical organizations. International classifications are a **powerful tool in facing the challenges posed by a globalized world**. Indeed, a widespread use of common classification frameworks facilitates the **integration** of data at global level and at the same time achieves savings in resources and capability, avoids the proliferation of classifications that are separately developed, implemented and maintained, and reduces overall costs for national statistical agencies. **Efficiency gains** are significant for individual countries adopting international schemes and for the global statistical system as a whole.

In agricultural and rural statistics, the need for more meaningful international statistical classifications has increased dramatically in recent years. This is due, on one hand, to the increasing **demand for new official statistics** and the **need to integrate data** on agriculture, forestry and fisheries within national statistical systems (NSSs) and, on the other, the **lack of country-level capacities** to produce and report statistical information. In developing countries especially, this has generated a decline in the quantity and quality of agricultural and rural statistics (WB, FAO & UN, 2010).

In addition, international classifications have been more often used in statistical domains other than that of agriculture; for which *ad hoc* lists were usually adopted at national level. In some cases, these lists may have originally been designed as legal – rather than statistical – tools, also in the light of the strategic role played by the agricultural sector in many countries. The different approach followed for agricultural statistics, as compared to other statistical domains, has often contributed to the **isolation or exclusion of agricultural statistics from NSSs**.

The Food and Agriculture Organization of the United Nations (FAO) has responded to this challenge by advancing its collaboration with other international organizations<sup>2</sup> to **better integrate agriculture into major international schemes**, and by revising FAO's classification system to enhance its relevance and ensure its compatibility with other international standards<sup>3</sup>. For this reason, the implementation of international standards at country level is particularly important and is recommended by these Guidelines, to improve the integration of agricultural statistics into NSSs.

The **Global Strategy to Improve Agricultural and Rural Statistics** (WB et al., 2010) also includes work on international classifications for agricultural statistics in its Action Plan, because it is particularly relevant to the endeavours aimed at implementing its basic principles. These endeavours are:

- **harmonization** of concepts, definitions, classifications and standards across different data producers within the country, which promotes the integration of agriculture into NSSs and facilitates a country's inclusion in global statistical activities;
- **enhancement** of communication on classifications across different institutions in the country, which facilitates the harmonization and integration of data sources;
- **promotion** of exchange of information and good practices across countries, which reinforces cooperation with regional and national organizations in the implementation of international classifications for agricultural statistics and boosts data comparability across countries and over time;
- **implementation** of common international classifications, which improves data quality and decreases countries' reporting burden to international organizations;
- **provision of support** to countries through capacity development on classifications, thus enabling greater uptake and correct application;
- **facilitation** of countries' participation in international governance mechanisms on the development, management and review of standards and classifications for agricultural statistics, which ensures the sustainability of agricultural statistics worldwide.

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<sup>2</sup> In particular, the UNSD and the World Customs Organization (WCO).

<sup>3</sup> For further information on the activities carried out by FAO on statistical classifications, see Ramaschiello 2011, 2013 and Ramaschiello and Vannuccini 2015a, 2015b.

A global survey conducted by FAO in 2012 on the classifications used by countries for agriculture and food products has shown a high demand for capacity development in the field of statistical classifications. Out of the 102 countries that participated in the survey, 60 per cent asked for capacity development and technical assistance by FAO in this domain<sup>4</sup>.

These Guidelines were developed to meet the needs for capacity development expressed by countries. The aims are the following:

- bringing together comprehensive information on statistical classifications, and in particular those used for agricultural statistics;
- equipping users with a better understanding of these schemes; and
- providing a convenient and practical reference framework for the application of international standards at national level, thus enhancing data quality and comparability across countries and over time.

Strengthening cooperation on classifications and standards between FAO and the countries, Regional Organizations (ROs) and other institutions involved is essential to enhance the harmonization of data collection at global level and to give countries greater voice in the international governance of classifications and standards for agricultural statistics.

Consultation with countries is a crucial mechanism for ensuring the relevance, uptake and updating of international classifications. It is hoped that the Guidelines will facilitate this consultation and assist countries that are willing to engage or are already engaged in the adoption of international classifications or their adaptation to NSSs.

The Guidelines comprise five Chapters and an Annex:

- **Chapter 1** introduces the theoretical framework of statistical classifications, including key definitions, basic principles and core components;
- **Chapter 2** provides information on correspondence and conversion tables, and on how to convert data from one classification to another;
- **Chapter 3** includes information sheets on the major classifications used for agricultural statistics; six main features (what, when and who, versions, purpose and applications, sections on agriculture, structure) are presented for each of the classifications below:
  - International Standard Industrial Classification of All Economic Activities (ISIC)
  - Central Product Classifications (CPC) and its expansion for agricultural statistics
  - Standard International Trade Classification (SITC)
  - Harmonized Commodity Description and Coding System (HS)
  - Classifications of Individual Consumption According to Purpose (COICOP)
  - Classifications of the Functions of Government (COFOG)
  - International Standard Classification of Occupations (ISCO)
  - International Classification by Status in Employment (ICSE)
  - International Standard Classification of Education (ISCED)
  - SEEA Land Use (LUC) and Land Cover Classification (LCC)
  - FAO classifications in the World Programme for the Census of Agriculture (WCA)
  - FAO classifications for fisheries and aquaculture statistics
- **Chapter 4** illustrates the benefits of using international classifications at country level and explains, with examples, how these can be adapted to meet the needs of NSSs;
- **Chapter 5** summarizes the key information and recommendations set out in the Guidelines;
- **the Annex** looks at successful practices worldwide, showcasing efforts undertaken by countries and ROs to

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<sup>4</sup> Updates on FAO's work on classifications is provided annually to the FAO Regional Commissions on Agricultural Statistics. For further details, see FAO (2013) and (2014b).

support the implementation and adaptation of international classifications. This section brings together lessons learnt and illustrates how international classifications have been applied at both regional and country level. This is a “living” section, and will be expanded and updated as soon as more information becomes available: countries are therefore encouraged to contact us to share and present their experience.



# Statistical classifications: concepts, components and documentation

## 1.1 WHAT IS A STATISTICAL CLASSIFICATION?

The basic principles of statistical classifications are defined in the document titled *Standard Statistical Classifications: Basic Principles* (Hoffmann & Chamie, 1999), approved by the UNSD in 1999.

Over the years, this document has been expanded and integrated. The *Best Practice Guidelines for Developing International Statistical Classifications* (Hancock, 2013) are a complementary document that supports the Basic Principles and provides for the adoption of best practices in the development, maintenance and implementation of international statistical classifications. The document was developed for use by international and national statistical agencies and other organizations that may develop, maintain and implement statistical classifications. The *Best Practice Guidelines* were endorsed by the Expert Group on International Statistical Classifications (EG) in 2013 and revised between 2014 and 2015; they were conceived as a living document, to be revised and updated regularly to reflect the discussions on and decisions taking place at international level on statistical classifications. The definitions included in this Section are taken mainly from the *Best Practice Guidelines*, to which readers seeking further information are directed.

The Expert Group on International Statistical Classifications is the “central coordination body for the current and future work on classifications that are the responsibility of the Statistics Division, and for the coordination and review of other classifications that are the responsibility of other international organizations and that have been proposed for adoption by the Statistical Commission” (UNSD, 2013a). The EG regularly reports to the UNSC. International statistical classifications developed by international organizations other than the UNSD can also be approved and adopted through the EG and the UNSC.

A statistical classification is **defined** as “a set of categories which may be assigned to one or more variables registered in statistical surveys or administrative files, and used in the production and dissemination of statistics. The categories are defined in terms of one or more characteristics of a particular population of units of observation. A statistical classification may have a flat, linear structure or may be hierarchically structured, such that all categories at lower levels are sub-categories of a category at the next level up. The categories at each level of the classification structure must be mutually exclusive and jointly exhaustive of all objects in the population of interest.” (UNSD, 2013a)

The primary **purpose** of statistical classifications is to provide a framework against which to collect, organize, compile, analyse, disseminate and archive data, from both statistical and administrative collections, and to report and compare statistics at international level. Statistical classifications can be used to facilitate the collection, organization and presentation of statistics, standardize statistical information, aggregate and disaggregate data sets in a meaningful way, and to support policy and decision-making.

The UNSD, in consultation with the Expert Group on International Statistical Classifications (EG), has defined a set of *essential criteria* that statistical classifications must meet. In particular, a statistical classification must be:

- based on a consistent **conceptual basis**, i.e. sound concepts and principles;
- **up-to-date, relevant**, and adequate to meet **users' needs**;
- **robust** enough to last for a period of time;
- organized in a **flat or hierarchic** structure in which categories are mutually exclusive and exhaustive and definitions are **clear and unambiguous**;
- **comparable** over time, between collections and to other related standard classifications (national or international);
- **supported** by instructions, manuals, coding indexes, handbooks and trainings to facilitate users.

Categories in statistical classifications must be:

- **exhaustive and mutually exclusive** – each member of a population may be allocated to only one category, without duplication or omission;
- **stable** – they must not change too frequently or without proper review, justification, or documentation;
- **well-described** – with a title in a standard format and supported by definitions, coding indexes and correspondence tables to related classifications;
- **balanced**, within the limits set by the principles defined for each classification (i.e. not have too many or too few categories);
- **relevant** – reflect the realities of the field to which they relate (e.g. in an industry classification, the categories should fully and accurately reflect the country's industrial activities).

The definition of a sound **conceptual basis** is particularly important, because it enables users to understand the classification. This basis, consisting in the core concepts and principles that govern the construction of the classification system, should be used to categorize, interpret and structure the classification. It should be well-defined and documented in the explanatory notes or methodological documents accompanying the classification. The conceptual basis includes the definition of the domain covered (the “universe of discourse”), which should be developed through international collaboration, the production of an agreed international standard, or stakeholder consultation or agreement between national statistical agencies.

The **classification unit** is the basic unit to be classified in the classification (e.g. jobs in an occupation classification, or activities in an industrial classification such as ISIC). Statistical units are the units of observation or measurement for which data are collected or derived. Statistical units may be persons, products, businesses, geographic areas, events, jobs, etc. and may or may not coincide with the classification unit. For example, in ISIC, the classification unit is the economic activity and the statistical unit is the enterprise (and the establishment); the classification unit thus differs from the statistical unit.

The **custodians** of international classifications are the organizations responsible for the development and maintenance of the classifications; they are also responsible for supporting the implementation of international classifications at national level. The main custodian of international statistical classifications is the UNSD. However, a number of sector-specific international classifications are owned by other international agencies, such as FAO, the WHO, the ILO, UNESCO and the ISO.

The International Family of Statistical Classifications is a group of international classifications that fulfils the basic principles and essential criteria of international statistical classifications, and that have been reviewed and approved by the UNSC or a similar competent body. They play a role as standard classifications in individual or multiple statistical domains such as economics, demographics, labour, health, education, social welfare, geography, the environment and tourism<sup>5</sup>.

**BOX 1**  
**Mandate of the Expert Group on International Statistical Classifications – Terms of Reference**  
**(Para.s 6-8)**

6. A key function of the Expert Group is to assist and advise the Statistical Commission in:
- a. Promoting the adoption of best practices in the development of international classifications;
  - b. Coordinating work on those standard classifications that are members of the International Family of Statistical Classifications, including examining changes to classifications and clarifying their relationship to other international classifications;
  - c. Promoting the adoption of the standard classifications of the International Family of Statistical Classifications within regional and national statistical systems to improve the international comparability of data;
  - d. Assessing the appropriateness of requests for inclusion of classifications into the International Family of Statistical Classifications as standard classifications;
  - e. Ensuring that the various classifications are suitable for use in the range of statistical activities in which they are to be applied and that they promote conceptual and methodological coherence in the statistical system, as well as reflecting practical considerations in data collection and compilation;
  - f. Developing a strategic approach towards the future development of the International Family of Statistical Classifications.

7. The tasks of the Expert Group include advising on classification best practice principles; reviewing the concepts and principles of existing and emerging international classifications; facilitating the harmonization of related classifications; reviewing classifications against the criteria for inclusion in the International Family; and facilitating or undertaking classification reviews where appropriate. The Expert Group will also provide guidance to the Statistics Division and other custodians of international standard classifications on technical matters of classification revisions or development, as well as strategic planning for classifications work, if so requested.

8. The Expert Group will decide whether certain technical, analytical or exploratory tasks should be carried out by a suitable subgroup of the Expert Group. If the creation of a subgroup is warranted, the Expert Group will specify the goals and, if applicable, the lifespan of these subgroups. The subgroups should report back to the Expert Group for evaluation of their tasks and approval of their findings or decisions.

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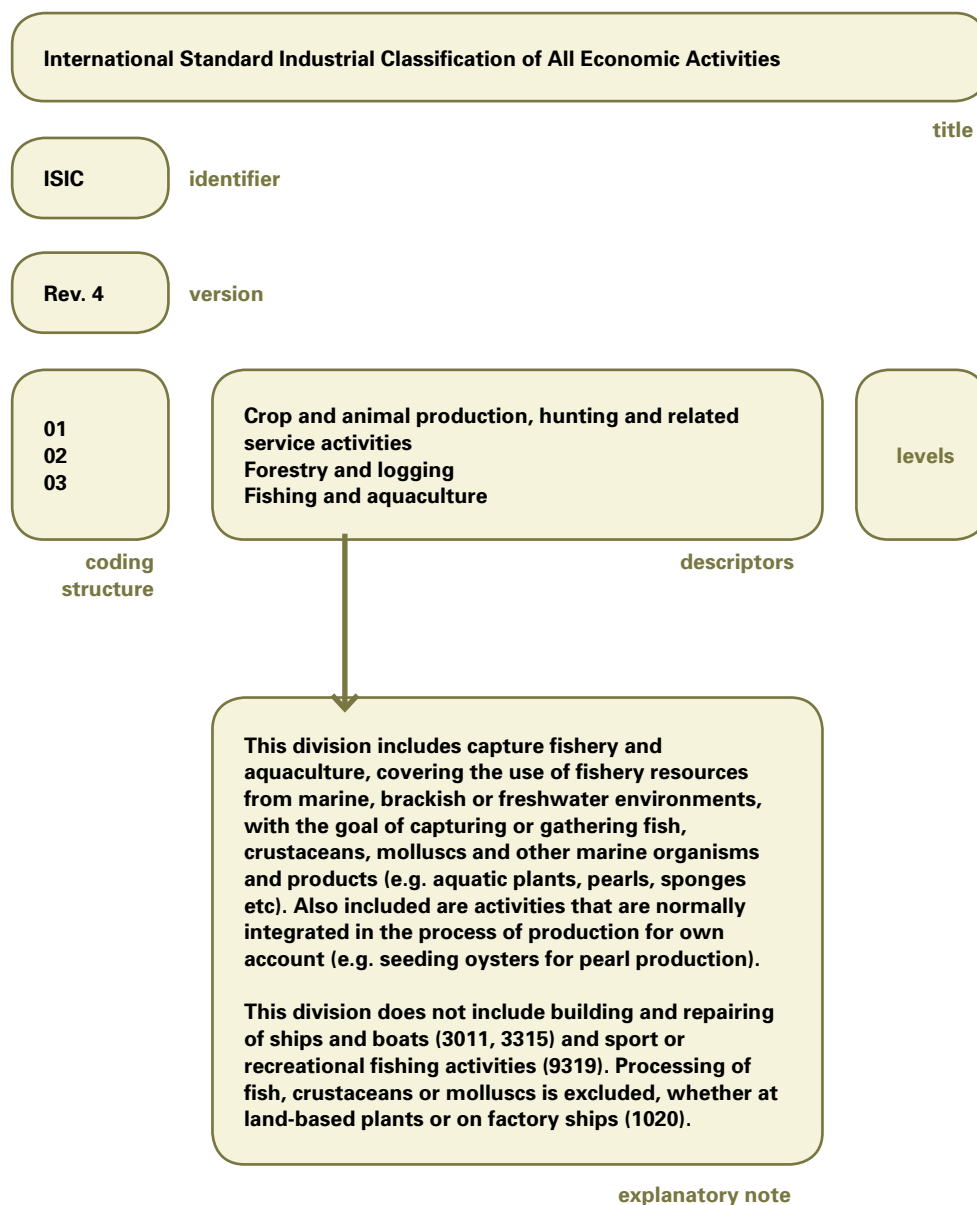
<sup>5</sup> The EG is currently considering an enlargement of the concept of “Family” to include classifications that have obtained de facto acceptance in international statistics in certain fields, without having been explicitly approved as international standard classifications. The classifications within this enlarged Family will still be measured against the basic criteria.

## 1.2 COMPONENTS OF STATISTICAL CLASSIFICATIONS

This Section illustrates and explains the various components of statistical classifications, in particular:

- title, identifier and version
- structure, coding system and levels
- descriptors
- explanatory notes
- case laws
- indexes

**FIGURE 1.1**  
ISIC Rev. 4 is taken as an example to illustrate the components of statistical classifications



**Registry entry #1702**

**ID: 1702**

**Type: Interpretation**

**Last updated: 21/11/2003**

**Request from: Bureau of Statistics, Taiwan**

**Dried citrus fruits**

**Request:** Why does the reference to the ISIC Rev.3.1 in CPC class 0131 and class 0132 not include ISIC 1513 (Processing and preserving of fruit vegetable)? ISIC 1513 also includes dried fruit and nuts

**Decision:** The boundary between agricultural and manufacturing activities is sometimes difficult to define, and the beneficiation process of agricultural products is a typical example of that. The distinction made here practically separates activities carried out in an agricultural context to prepare products for the (primary) market and the further processing of agricultural products in an industrial context. The information reviewed for the particular case you mentioned indicated that in the majority of cases there is no clear significant and separate industrial treatment for drying of citrus fruit, but that this is mostly considered an agricultural product. Even detailed product classifications, such as the HS do not make a distinction in this case. The manufacture of dried fruit referred to in ISIC 1513 does therefore practically not apply to citrus fruit. While it may theoretically be possible to include links between these categories, they would serve no practical purpose and only obscure the relation between these activities and products. There are a number of other cases in the CPC as well, where the ISIC link is based on a "weight" decision (majority of production) and does not show all minor possibilities of producing that specific product.

(applies to ISIC Rev.3.1)

case law\*

Keyword "agriculture" in ISIC alphabetical index

code	activity description
0111	Peas, field, dry, <b>agriculture</b>
0140	Weed control service, chemical, <b>agriculture</b>
7310	<b>Agriculture</b> research and development laboratories
7513	<b>Agriculture</b> and forestry programs, provincial government
7513	<b>Agriculture</b> extension services
7513	<b>Agriculture</b> extension services, state
7513	<b>Agriculture</b> fair boards, provincial
8030	<b>Agriculture</b> schools (non-university)
9111	<b>Agriculture</b> federation
9111	Federation of <b>agriculture</b>

index\*

\*(applies to ISIC Rev.3)

### 1.2.1 Title, identifier and version

The **title** is the formal title associated with the classification. It indicates the classification's name, for example:

- *International Standard Industrial Classification of All Economic Activities*
- *International Standard Classification of Education*

The **identifier** is the abbreviation of the classification's title. For example:

- ISIC
- ISCED

The same classification may have different **versions**. These are variations of the same classification, reflecting the most recent developments in the economy or in a specific sector thereof. Individual versions are valid for a given period of time; new versions should not be created too frequently, to ensure comparability over time. Different versions are generally given numbers in ascending order (e.g. 1, 2, 3); decimal notation (for example, 3.1) is used when only minor updates have been introduced and the new version is not excessively different from the previous one. Alternatively, versions are labelled with the year in which the classification came into force (e.g. 2002, 2007, etc.).

### 1.2.2 Structure, coding system and levels

The **structure** of statistical classifications may be flat or hierarchical:

- a **flat** structure entails a simple list of categories on the same level. This type of structure is used when there is no need to group categories into aggregates (see Example 1.1 below);
- **hierarchical** classifications are articulated on different levels, with the lower levels being the most detailed. These classifications group single items into relevant aggregates that can be used for analytical purposes (Example 1.2 below).

#### Example 1.1:

Flat classification

Code	Descriptor
1	Wheat
2	Rice
3	Millet
4	Maize
5	Sorghum
6	Cabbages
7	Tomatoes
8	Onions
9	Bananas
10	Oranges

#### Example 1.2:

Hierarchical classification

Code	Descriptor
1	Cereals
11	Wheat
12	Rice
13	Millet
14	Maize
15	Sorghum
2	Vegetables
21	Cabbages
22	Tomatoes
23	Onions
3	Fruit
31	Bananas
32	Oranges

The **coding system** is a key feature of a statistical classification. Codes may be *numerical*, *alphabetical* or *alphanumerical* (Examples 1.3 and 1.4). Codes may be separated by a decimal point, e.g. 000000 → 0000.00.

**Example 1.3:**

Numerical codes

Flat	Hierarchical
1	01
2	011
3	0111
4	02
5	021
6	0211
7	03
8	031
9	0311
10	04

**Example 1.4:**

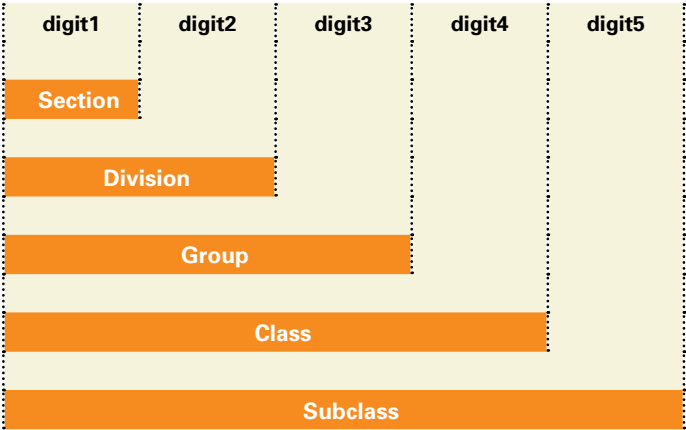
Alphabetical and alphanumerical codes

Flat	Hierarchical 1	Hierarchical 2
A	A	01
B	01	011A
C	011	011B
D	B	012
E	02	02
F	021	021A
G	C	021B
H	03	03
I	031	031
J	D	0311

In a hierarchical structure, the length of the code must provide information on the level of detail and the position of each item within the classification’s structure (as a “speaking code”; see Example 1.5).

**Example 1.5:**

“Speaking code” in a hierarchical classification



The **number of digits** that form the classification’s codes does not always reflect the **number of levels** in a classification. This happens when more than nine positions for each level are envisaged. According to the *Best Practice Guidelines*:

“the number of levels defined should be kept to the minimum to give the users the detail they need for different types of description and analysis. Hierarchic classifications usually require no more than 5 levels but should not have more than 9 levels. It should be noted that to create effective and transparent code patterns becomes more difficult with more levels in the classification”.

## BOX 2

### Remarks/Tips 1

When developing a new classification or implementing new codes, it should be ensured that that:

- Codes follow an ordered and consistent numbering and jumps are avoided to the extent possible. For example, 0111 should be followed by 0112 and 0113, while the sequence 0111, 0114, 0117 should not be adopted unless necessary. An exception to this rule are classification updates, when changes to the previous version require renumbering the amended category to avoid confusion between versions, dropping the old code, and thus introducing a jump in the sequence. This method is often used in the Harmonized System.
- According to convention, “9” stands for “other” and thus gaps are permissible also in this case (e.g. the sequence 0111, 0112, 0113, 0119 is acceptable).
- In a hierarchical classification, the length of the code properly reflects the level of detail required (the longer the code, the greater the detail); however, in certain situations, and particularly for database purposes, it may be possible to “normalize” the code by adding **trailing zeros** so that coding may be done at levels other than the lowest (which is the recommended level). Trailing zeros, in these cases, indicate that categories at lower levels exist in the classification, but responses can only be coded at a higher level.

#### Example of code normalization

In this example, the coding is done at the five-digit level:

01111 5 digits

However, if the response can only be coded at the two-digit level, three trailing zeros are added:

01 2 digits → 01000 5 digits (three trailing zeros added)

The same is achieved if the response can only be coded at three or four digits:

011 3 digits → 01100 5 digits (two trailing zeros added)

0111 4 digits → 01110 5 digits (one trailing zero added)

- As an implementation issue (not part of the classification itself), **trailing zeros** are also used to code vague or imprecise responses from surveys; these responses are assigned the code for the relevant higher category followed by trailing zeros, to ensure that residual groups (“not elsewhere classified”, or n.e.c.) are not used for vague responses; a similar approach can be adopted in unit record files and databases to denote instances in which the most detailed code is not known.

A note of caution:

- **Code normalization** to a standard length may generate misleading information in hierarchical classifications where the “0” at the end of the code suggests that no additional categories exist at the lower level.

*Solution:* code normalization is not recommended. If necessary, it can be used for coding and computational purposes in databases only. In methodological documents, classification structure for output or presentation and in metadata, it is recommended to leave the code at different lengths, and to not add trailing zeros.



## BOX 2 (CONTINUED)

### Remarks/Tips 1

- In some classifications, codes start with a **leading zero**; these may create problems with some applications (e.g. Excel spreadsheets, .csv): if the software does not recognize the zero at the beginning of the code as a digit, the zero risks being deleted from the code.  
*Solution:* store the codes as text (e.g. by adding a quotation mark (')) or a letter before the code, or by predefined data type as text); alternatively, store your classification in a database.
- **Leading zeros** can also create problems with a number of computing languages (e.g. Java), for which the leading zero means that the code should be treated as octal (in these cases, the string '015' is automatically converted into the number 13 because the leading zero means that the '15' should be treated as octal, which gives 13 in base 10).  
*Solution:* treat number as strings (the technical implementation of this feature depends on the software used).
- Another possible solution for **leading zeros** is to use alphanumeric codes (e.g. 011 A011): thus, the code is automatically stored as text. The issue then raised by using an alpha code may be the limitation on the broad levels of classifications, the lengthening of the actual code to accommodate it and related typing issues, or an increase in the classification's levels.

### 1.2.3 Descriptors

According to the terminology adopted by the UNSD, “descriptors are usually a one-line text describing the category of the classification” (Example 1.6 below). They may also be called “definitions”, “labels” or “names”.

#### Example 1.6A:

Descriptor of CPC Ver.2.1 code 21421

Code	Descriptor
21421	Groundnuts, in shell

The term derives from the Generic Statistical Information Model (GSIM), to which classifications terminology is aligned. While the more generic and commonly used term “definition” may refer to both the descriptor and the relevant explanatory notes, use of a “descriptor” is preferable to ensure mutual understanding and avoid misinterpretation.

Together with codes, descriptors are required to refer to and unambiguously describe each category of the classification. Descriptors should be as short as possible (usually one line of text), unique and meaningful. They must illustrate the category's exact content with certainty. They should be meaningful when read on their own and self-explanatory so that, to the extent possible, no further information is necessary to understand the scope of each category (although explanatory notes are often used to provide additional information). The same descriptor may be repeated at different levels in the classification hierarchy only when it refers to a category that is represented without further subdivision at more than one hierarchical level (Example 1.6B).

**Example 1.6B:**

Descriptors of CPC Ver.2.1 codes 0311 and 03110

The same descriptor may be repeated at different levels in the classification hierarchy when it refers to a category that is represented without further subdivision at more than one hierarchical level:

Code	Descriptor
0311	Logs of coniferous wood
03110	Logs of coniferous wood

**BOX 3**  
**Remarks/Tips 2**

For database use, questionnaires or printed publications, descriptors can be replaced by “abbreviated names”. These may be one of two types:

- abbreviated descriptors – for example, “Forage products, fibres, living plants, cut flowers and flower buds, unmanufactured tobacco, and natural rubber” could be abbreviated into “Forage, fibres, plants, flowers, tobacco, rubber”
- abbreviated words – e.g. “Other tropical and subtropical fruits” abbreviated into “Other trop. & subtrop. fruits”

*A note of caution*

When developing short names, care should be taken to ensure that the principles of exclusiveness and exhaustiveness are respected to the greatest possible extent. Generally, the development of abbreviated names risks compromising the category’s clarity and correct interpretation. Furthermore, abbreviated names often give rise to problems, as what may be intuitive for one user or country may not always be the case for another; translation into different languages may also be problematic. Therefore, the use of abbreviated names is not recommended unless necessary.

**1.2.4 Explanatory notes**

According to UNSD terminology, explanatory notes “provide supporting information about the classification category. Often they are statements which clearly define the category or they may assist users in determining the boundaries of the category. Explanatory notes may explain the content by giving examples of inclusions and exclusions, or provide rules or guidelines for how to use that particular category.”

The UNSD also calls them “definitional descriptions”: for this reason, and as mentioned in Section 1.2.3 above, precision is important when referring to the descriptor and explanatory notes, while the term “definition” can be left with a more generic meaning.

Explanatory notes provide supplementary information on the scope of the categories of a classification system and clearly define their boundaries. Unlike descriptors, explanatory notes are not limited in their length. Indeed, explanatory notes may be very long, limited only by the storage system used or the software employed for publication. For example, a spreadsheet cell only allows a limited number of characters to be inserted, while word processing software has no such restriction; the length of the notes may thus be system-determined for or by the user.

In the case of the Harmonized System (HS), there is a clear distinction between the descriptors and the explanatory notes: the former are legally binding (and available to all users free of charge), while the latter do not form part of

the legally binding text and are available to national customs authorities and other users through subscription to the World Customs Organization (WCO) (Example 1.7 below).

### **Example 1.7:**

Comparison between descriptor and explanatory note for the HS 2012 heading code 10.05

**Descriptor:** Maize (corn)

**Explanatory note:** There are several kinds of maize (corn), with grains of different colours (golden yellow, white, sometimes reddish brown or mottled), and of different shapes (round, dog tooth shaped, flattened, etc.). The heading does not include sweet corn (Chapter 7).

Explanatory notes provide important information for data collection and use. Examples of inclusions and exclusions are often provided in the explanatory notes as additional aids to users (as in Example 1.7 above).

Explanatory notes must observe a number of key features. In particular, they must be:

- **clear** and **unambiguous**, allowing for common interpretation by users;
- **exhaustive** and **comprehensive**, providing a full description of the item, and not omitting any component; when an item is listed as “excluded”, it is necessary to indicate where it has been classified;
- **mutually exclusive**, avoiding overlaps; and
- **standard**, universally applicable in all contexts and thus easier for users to search.

### **1.2.5 Case laws**

In the context of classifications, the term “*case law*” indicates decisions taken on selected cases that set rules for the correct application of the classification. The information is made public as an additional tool for users. For example, case laws clarify the boundaries of more complex classes and categories that may otherwise be difficult for users to interpret, or provide guidance on how to classify cases that were not conceived of or explicitly set out when the classification was originally released (these cases should be noted for inclusion during the next review).

Case laws are especially useful when new developments are difficult to interpret within the classification’s existing definitions. For example, new products may appear on the market that are not clearly reflected in any of the classification’s current category definitions, or that could be included in more than one category.

The UNSD has developed an online Registry (UNSD, n.d.-e) in which case laws are made available to the public and organized in the following categories (an example is given in Figure 1.1 above):

- **ruling:** a change in the classification code, descriptor or explanatory note (with or without a change in the boundaries of the class);
- **interpretation:** the assignment of a different classification code using existing tools such as explanatory notes, indexes or correspondence tables;
- **correction:** a correction of errors made in the construction of a classification or of an obvious mistake (e.g. in spelling).

Case laws are also available for the HS (Example 1.8). Countries can contact the WCO and submit requests for clarification, for example on where certain products are classified. Once a decision is taken, the WCO publishes the case laws as a complement to the HS Explanatory Notes (see Section 1.2.4 above). These are available in the *Compendium of Classification Opinion* (hard copy) and in the online *Harmonized System Database*, which are both published by the WCO and available by subscription<sup>6</sup>.

<sup>6</sup> A list including these and other publications is available at: <http://wcoomdpublishings.org/harmonized-system-2012.html>.

### Example 1.8:

Case law for “Nasi Nua” in the Harmonized System 2012 (extracted from the HS database)

Nasi Nua (an Indonesian deep-frozen rice dish) is classified under sub-heading 1904.90 - “Other”<sup>7</sup>. However, this type of rice preparation is not mentioned in the 1904.90 descriptor or in the explanatory notes; therefore, it would be difficult for users to decide the correct classification of this product. The WCO has developed a case law for the product, to help users by providing clear information on the classification of Nasi Nua under sub-heading 1904.90.

This case law is recorded in the WCO database as follows:

**190490/1: Nasi Nua (Indonesian deep-frozen rice dish) consisting of pre-cooked rice (40%), beef strips (10%), several kinds of vegetables and spices. Adoption: 1989.**

Sub-heading	190490	- Other
Heading	1904	Prepared foods obtained by the swelling or roasting of cereals or cereal products (for example, corn flakes); cereals (other than maize (corn)) in grain form or in the form of flakes or other worked grains (except flour, groats and meal), pre-cooked, or otherwise prepared, not elsewhere specified or included.
Chapter	19	Preparations of cereals, flour, starch or milk; pastry cooks' products
Section	IV	PREPARED FOODSTUFFS; BEVERAGES, SPIRITS AND VINEGAR; TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES

#### BOX 4 Remarks/Tips 3

- If critical problems exist concerning the classification, or there are proposals for improvement, national organizations are encouraged to contact the classification’s custodians for support. The query may contribute to a clearer interpretation of the classification or its categories and to a more consistent approach in data reporting.
- It is recommended that case laws be maintained also at national (and not only international) level, to document all decisions taken, assist in the development or review of the international classification, allow for the correct interpretation of the classification (and therefore of the associated data) and enable comparison over time.

### 1.2.6 Indexes

According to the terminology adopted by the UNSD, a classification index consists of a list of words or short text strings describing a type of object, together with the code of the corresponding category.

Indexes are particularly helpful as they spell out the content of each category in the classification in a list of detailed items. They ensure consistent interpretation, support the classification review and help to organize responses to requests for information submitted by the users in a systematic manner. Indexes can also reflect real-life survey responses that make it easier to match responses to the correct classification codes.

<sup>7</sup> Heading 1904: “Prepared foods obtained by the swelling or roasting of cereals or cereal products (for example, corn flakes); cereals (other than maize (corn)) in grain form or in the form of flakes or other worked grains (except flour, groats and meal), pre-cooked, or otherwise prepared, not elsewhere specified or included.”

There are various ways to publish an index: in the hard copy of the classification, listing all index items with the corresponding code (an example is the ISCO-08); as a separate publication (with entries sorted by code or alphabetically) (e.g. ISIC Rev.2); or in electronic form, ready for use in a database (e.g. ISIC Rev.3). The latter approach makes it possible for the index to be updated easily when new entries are identified, for example through new survey responses. Electronic versions of the index can be used with either plain text searches or more complex search algorithms that facilitate identification of the correct code for a given product, activity, occupation, etc.

An easy way to develop an index is to start from the explanatory notes, select all keywords therein and sort them by alphabetical order or by code. The same can be achieved by reorganizing the words that form the descriptor and the keywords included in case laws. Other than the choice of keywords, their *order* is also important: it is recommended that keywords be used first; it is not necessary that all possible combinations of words be chosen. The phrasing or order of words is more important when the index is included in hardcopy publications than when it is primarily destined for use in a search engine (or a similar programme). It is noted that while explanatory notes may constitute a good starting point, the coverage of an index may exceed that which is specified in the explanatory notes. This may happen, for example, pursuant to a request for clarification received from a country: the response would be recorded in the index but not in the explanatory notes (at least until the explanatory notes are eventually revised accordingly).

**Example 1.9:**

Extracted from SITC Rev.3, alphabetical index for “grain” (source: UNSD Classifications Registry)

code	product description
044.9	Grain, maize, not hushed or otherwise worked
045.3	Grain sorghum, unmilled
048.11	Grain, cereal, roasted or swollen as breakfast food, ready for consumption
048.12	Grains, cereal, broken, precooked or otherwise prepared (excl. maize)
048.12	Rice, in grain form, cooked, ready for consumption after heating, whether or not small quantities of vegetables or seasonings have been added
048.12	Rice, in grain form, precooked (either fully or partially cooked and then dehydrated), whether or not small quantities of vegetables or seasonings have been added
048.13	Grain, cereal, rolled or flaked (excl. prepared breakfast foods)
048.14	Grain, cereal (excl. rice), hulled or otherwise worked to remove (wholly or partially) the pericarp
048.14	Grain, cereal (excl. rice), hulled, whether or not sliced or kibbled
048.14	Grain, cereal, clipped
048.14	Grain, cereal, kibbled
048.14	Grain, cereal, pearled
048.14	Grain, cereal, polished (excl. rice)
048.2	Grain, cereal, malted
056.69	Corn, sweet, in grains, prepared or preserved other than by vinegar or acetic acid, frozen
056.77	Corn, sweet, in grains, prepared or preserved other than by vinegar or acetic acid (excl. frozen)
061.99	Sugar, sorghum grain, solid, whether or not containing added flavouring or colouring matter
075.25	"Grains of paradise" (Malaguetta pepper), whether or not crushed or ground

## BOX 5

### The Generic Statistical Information Model (GSIM)

The information set out in this box concerns GSIM Version 1.1 and is taken from the website of the UN Economic Commission for Europe, in particular from the following publications:

- *GSIM Brochure*, by Thérèse Lalor; last modified by Steven Vale on 6 May 2014
- *Generic Statistical Information Model (GSIM): Statistical Classifications Model (Version 1.1)*, December 2013

The GSIM aims to define and describe information that flows between statistical processes in a harmonized way.

The GSIM is neither a software nor an information technology (IT) standard. It is a *strategic approach* and a *way of thinking*, designed to bring together statisticians, methodologists and IT specialists to modernize and streamline the production of official statistics.

The GSIM provides a set of standardized and consistently described “information objects”, which are the inputs and outputs in the design and production of statistics. It is a model of objects that specify information on the real world. Examples include data and metadata (such as classifications), as well as the rules and parameters needed for production processes to run (e.g. data editing rules). The GSIM identifies approximately 110 information objects grouped into four broad categories.

The GSIM includes a Statistical Classifications Model, which was developed in 2013 by a Working Group composed of members of the EG and the Statistical Metadata (METIS) group. It is based on the Neuchâtel Terminology Model and is both a terminology and a conceptual model, independent of IT software and platforms.

The GSIM Classification Model enables countries to document national classifications and adaptations of international classifications, as well as to develop a database in which to store and manage these records.

The GSIM Statistical Classifications Model orders concepts in a two-level structure of object types and attributes. At the first level, it specifies the basic object types of a classification database (e.g. Classification Family, Classification Series, Statistical Classification, Correspondence Table, and Classification Index); at the second level, it lists the attributes associated with each object type. It defines the key concepts for structuring classification metadata and, indirectly, presenting information on classifications to different kinds of users.

According to the GSIM team, the GSIM Statistical Classification Model terminology should be regarded as a “complement” rather than a “rival” to other terminologies in the field (such as the *Best Practice Guidelines* mentioned in the beginning of this Chapter), although there may be a certain overlap of terms. In most cases, there is generally accordance between the concepts and the terms used, although the wording of individual definitions may vary. Inconsistencies may be due to the particular focus and purpose of the GSIM terminology, which calls for rather specific and narrowly defined concepts.

For further information, see UNECE (2014a), (2014b) and (2011).

# 2

## Correspondence tables and data conversion

### 2.1 CORRESPONDENCE AND CONVERSION TABLES

A *correspondence* table (or *correlation* or *concordance* table) expresses the relationship between two statistical classifications or different versions or variants of the same classification (Example 2.1). It details how a category in one classification relates to the new or another classification (UNSD, 2015).

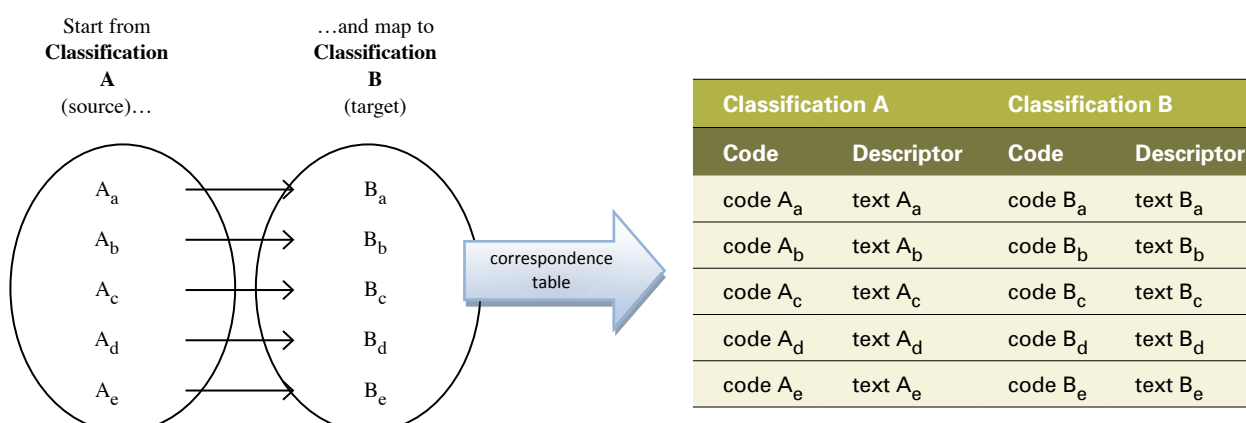
Correspondence tables are built to compare the descriptors and explanatory notes for each category and to establish the links accordingly.

In correspondence tables, the **source** classification (called Classification A in the examples below) is on the left-hand side of the table, while the **target** classification (Classification B below) is on the right-hand side.

Correspondence tables should be developed starting from the lowest level categories. Then, high-level links can be derived from the lower ones.

#### Example 2.1

Links between classifications and development of a correspondence table



When building correspondence tables, various scenarios may be encountered. Categories may match perfectly across classifications (one-to-one), or one class in the source classification may split into several categories in the target classification (one-to-many); in other cases, two or more classes in the source classification may link to one (many-to-one) or many classes (many-to-many) in the target classification.

#### BOX 6

##### Correspondence tables between the same or different types of classifications

It should be noted that correspondence tables can be developed not only between classifications designed for measuring the same type of object (the same type of classification unit and statistical unit – for example, how to link two product classifications), but also between different types of classifications (designed for different types of units).

In the first case, the correspondence table will reflect how the different criteria applied in the source and in the target classifications relate to each other. In other words, for each category in the source classification, it is necessary to find the correspondent categories in the target classification (using a different set of criteria) that would represent the same object. While this may be difficult, depending on the criteria used in the two classifications, it is still the same object (e.g. a product) that must be classified.

In the second case, the correspondence table will link different types of classification units (and of statistical units), which means that a decision must first be taken on how these different concepts are to be linked. Different types of linking will lead to different correspondence tables. For example, if a correspondence table is to be set up between a product classification (e.g. the CPC) and an activity classification (e.g. ISIC), it is first necessary to determine how to link the underlying classification units (products and activities). A common practice is to link a product to the activity that produces it. Other options could be to link a product to the activity that uses it (e.g. to analyse imports), or to link a product to the principal activity of a unit that produces the product, even if only as a secondary product.

As another example, if it is sought to link an expenditure classification (e.g. COFOG) and ISIC, first it must be decided how to link the transactions to statistical units (thus reflected in the purpose of the transaction in relation to the activity of the statistical unit). The transaction could be linked to the unit that buys the product or service rendered or to the unit that provides the product or service rendered.

Each case will result in rather different correspondence tables, but each will have its own specialized application. These Guidelines and the discussions on linkages contained herein focus on the linkages between classifications applied to the same classification unit, but the principles elucidated apply to other correspondences too.

Correspondence tables are the first step to perform in developing *conversion* tables. While correspondence tables define item links across different classifications on the basis of definitions (adopting a “conceptual/methodological” mapping), the links established by conversion tables are functional to data conversion (“practical/simplified” correspondence tables). Conversion tables may also provide information on **coefficients of conversion**. Correspondence and conversion tables may be the same in some cases and differ in others, depending on the type of links between classifications: the more “linear” the links, the more similar the two tables will be. In general, conversion tables are developed for specific data and periods of time; conversion tables that are suited to all instances risk adversely affecting data quality. The conversion depends on the level of data to be converted: it is more problematic when the data are more aggregated and the data cannot be converted from a higher classification level to a lower one.



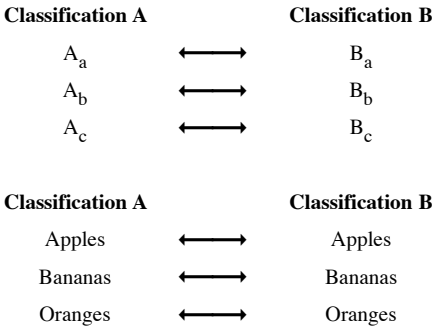
Four types of links in correspondence tables may be described (see Sections 2.1.1 – 2.1.4 below).

**2.1.1 One-to-one (1:1)**

One (particular) item in Classification A corresponds to exactly one item in Classification B and vice versa.

**Example 2.2:**

One-to-one type of link between items in Classifications A and B

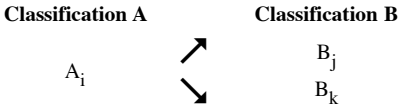


**2.1.2 One-to-many (1:m)<sup>8</sup>**

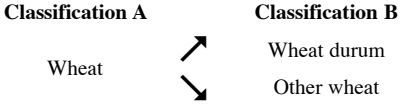
One item in Classification A corresponds to two or more items in Classification B; this means that item A<sub>i</sub> is split between items B<sub>j</sub> and B<sub>k</sub>.

**Example 2.3:**

One-to-many link between items in Classifications A and B



$A_i = B_j \cup B_k \rightarrow$  more detail in Classification B than in Classification A



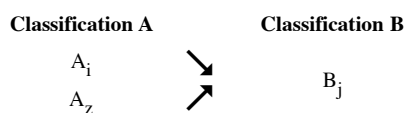
<sup>8</sup> A note of caution: many-to-many links may be easily confused with one-to-many links, unless all related codes are identified first.

### 2.1.3 Many-to-one (m:1)

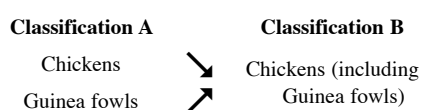
Two or more items in Classification A correspond to one item in Classification B.

#### Example 2.4:

Many-to-one link between items in Classifications A and B



$A_1 \cup A_z = B_j \rightarrow$  more detail in Classification A than in Classification B



#### BOX 7 Remarks/Tips 4

In correspondence tables, an asterisk (\*) is used to indicate a partial link. The partial link (\*) assigned to a code in the target classification indicates that the item in the target classification is partially linked to two or more items in the source classification. In Example 2.5 below, 0113\* in the correspondence table means that only a part of code 0113 in the target classification (ISIC Rev. 4) is linked to code 0111 in the source classification (ISIC Rev.3.1), because another part is linked to another code. Detailed information on the partial component may be specified in a "Details" column.

#### Example 2.5:

UNSD correspondence table for comparing ISIC Rev.3.1 and ISIC Rev.4

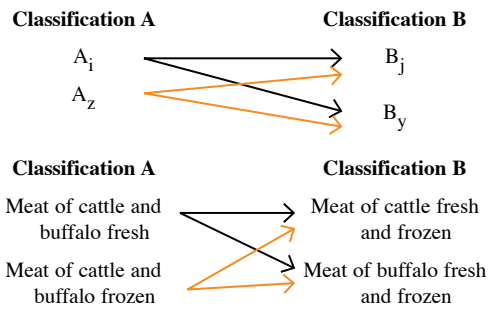
ISIC Rev.3.1	Part 3.1	ISIC Rev.4	Part 4	Details
0111	*	0111		Refer to expl.note of ISIC Rev.4 0111
0111	*	0112		Refer to expl.note of ISIC Rev.4 0112
0111	*	0113	*	Growing of sugar beet, roots and tubers
0112	*	0113	*	Production of vegetable seeds, mushrooms and truffles; leafy or stem vegetables, fruit bearing vegetables, root, bulb or tuberous vegetables

### 2.1.4 Many-to-many (m:n)

Two or more items in Classification A correspond to two or more items in Classification B.

#### Example 2.6:

Many-to-many type of link between items in Classifications A and B



$$A_i \cup A_z = B_j \cup B_y$$

It is possible to express  $B_j$  and  $B_y$  using only parts of  $A_i$  and  $A_z$ , which are expressed using \*:

$$B_j = A_i^* \cup A_z^* \text{ and } B_y = A_i^* \cup A_z^*$$

In many-to-many links, item definitions may be based on different concepts or criteria.

Various methods may be used to estimate the conversion coefficients (see Section 2.3 below).

## 2.2 CONVERTING DATA ACCORDING TO A NEW CLASSIFICATION

When adopting a new classification or shifting from use of one version to another, a major challenge consists in the reclassification of time series and ensuring comparability over time. It is noted that with the exception of one-to-one cases, a certain degree of arbitrariness and approximation are likely to be introduced, regardless of the method applied when converting data from one format to another. This must be noted in the metadata.

When mapping variables from the source (old) to the target classification (new), and before dropping or discontinuing use of the previous classification to finally adopt the new or revised scheme, countries usually proceed by “dual coding”; that is, to code survey responses or any other data source to two classifications (or versions) at the same time. This generates parallel data from both classifications and enables determination of the effect of the new classification on the data.

Different solutions for data conversion may be defined, depending on the different types of link identified in the correspondence tables (as described in Section 2.1 above)<sup>9</sup>.

### 2.2.1 One-to-one: no change

When the scope or content of the source category in the source classification (in Example 2.7, the old classification on the left-hand side of the table) matches the scope of the target category in the target classification (the new classification on the right-hand side of the table), the conversion is straightforward and the conversion ratio applied is “1”.

A classification at the lowest aggregation level is directly recoded to the revised classification. For example, the old code 01351 for Apples in CPC Ver.2 is recoded to 01341 in CPC Ver.2.1; the historical data for 01351 are assigned to 01341. This method, also called the “*key method*” (Buiten, Kampen & Vergouw, 2009), ensures that the relationship between the old and the new results is straightforward, because the old data are simply transferred to the new classification. However, the process and outcomes should be documented and communicated to users.

#### Example 2.7:

Converting data from Classification A to Classification B, in case of one-to-one correlation

Classification A (old classification)			A → B split ratio	Classification B (new classification)		
Code	Descriptor	Production quantity		Code	Descriptor	Production quantity
A <sub>a</sub>	bananas	1,000,000 tons	1	B <sub>a</sub>	bananas	1 * 1,000,000 = 1,000,000 tons

### 2.2.2 Many-to-one: merge

In this case too, the operation is relatively straightforward, because the item in the target (new) classification is the union of two or more items in the source (old) classification: in Example 2.8 below, item B<sub>a</sub> is an aggregation of many items in Classification A ( $B_a = A_a \cup A_b$ ).

<sup>9</sup> Sections 2.2.1 – 2.2.4 below are based on changes in the classification structure or definitions (which are typical cases). Changes in application rules may also have an impact, but for the sake of clarity and simplicity, these will not be discussed in these Guidelines.

**Example 2.8:**

Converting data from Classification A to Classification B in case of many-to-one correlation

Classification A (old classification)			A → B split ratio	Classification B (new classification)		
Code	Descriptor	Production quantity		Code	Descriptor	Production quantity (U)
A <sub>a</sub>	chickens	50,000 tons	1	B <sub>a</sub>	chickens and guinea fowl	1 * 50,000 +
A <sub>b</sub>	guinea fowl	20,000 tons				1 * 20,000 =
						<b>70,000 tons</b>

**2.2.3 One-to-many: split**

In this case, the item in the source classification corresponds to two or more items in the target classification. Therefore, the target classification is more detailed than the source one. To convert data from Item A<sub>a</sub> in Classification A to Items B<sub>a</sub> and B<sub>b</sub> in Classification B (for the same year t), it is necessary to calculate conversion coefficients or split ratios. At this stage, these are indicated with a question mark, assuming that their value is unknown (Example 2.9). Section 2.3 describes some methods and techniques for calculating the split ratios (in some countries, these may also be called “translation aids”; they allow users to decide on a percentage apportionment of the data to establish the relationships).

**Example 2.9:**

Converting data from Classification A to Classification B in case of one-to-many correlation

Classification A (old classification)			A → B split ratio	Classification B (new classification)		
Code	Descriptor	Production quantity		Code	Descriptor	Production quantity
A <sub>a</sub>	wheat	2,000,000 tons	?	B <sub>a</sub>	wheat, durum	?
			?	B <sub>b</sub>	wheat, other	?

**2.2.4 Many-to-many: merge and split**

The many-to-many type of link is the most difficult to deal with when converting, as the correlation between the source and the target classification is very low. Different criteria are often used to define items in the two classifications, which means that the estimation and application of split ratios entails significant approximation and decrease in data quality. In Example 2.10 below, the split ratios are indicated as unknown; as mentioned above, Section 2.3 illustrates some methods and techniques for calculating the split ratios in many-to-many cases.

**Example 2.10:**

Convert data from Classification A to Classification B in case of many-to-many correlation

Classification A (old classification)			A → B split ratio	Classification B (new classification)		
Code	Descriptor	Production quantity		Code	Descriptor	Production quantity
A <sub>a</sub>	meat of cattle and buffalo fresh	90,000 tons	?	B <sub>a</sub> *	meat of buffalo fresh and frozen	?
			?	B <sub>b</sub> *	meat of buffalo fresh and frozen	?
A <sub>b</sub>	meat of cattle and buffalo frozen	65,000 tons	?	B <sub>a</sub> *	meat of buffalo fresh and frozen	?
			?	B <sub>b</sub> *	meat of cattle fresh and frozen	?

## 2.3 CONVERSION COEFFICIENTS IN ONE-TO-MANY AND MANY-TO-MANY TYPES OF LINK

In **one-to-many** and **many-to-many** cases, the conversion techniques and solutions adopted may depend on whether data are available in both classification formats for a given period and data item. Several different methods may be applied. To be able to estimate split ratios, a prerequisite is the availability of data in both classification formats (source and target) for at least one reporting period (the more reporting periods are available, the better). As mentioned above (Section 2.2), countries usually proceed by “dual coding”, i.e. code survey responses to two classifications (or versions) at the same time. This generates parallel data from both classifications and enables the effect of the new classification on the data to be ascertained. Dual coding enables the calculation of split ratios (see Case 1 below). However, when dual coding is not possible and split ratios cannot be calculated, alternative actions can be taken (Case 2, further below).

It must be noted that when conversion coefficients can be calculated, and if they are to be applied to *backcast* time series (i.e. to express time series in the new classification backwards in time), data quality may decrease the further back in time the cast is undertaken, as split ratios are calculated on the basis of recent years (or one year only) and then applied to past time series.

### **Case 1: Data are available in both classification formats for at least one reference period**

Data are available in both classification formats for year  $t_0$  (where A is the source classification and B is the target classification).

#### **One-to-many correlation**

With reference to Example 2.9 above (Section 2.2.3), it is possible to calculate the conversion coefficients ( $\alpha$  and  $\beta$ ) for  $B_a$  and  $B_b$  as fractions of  $A_a$ :

$$\alpha = B_a / A_a = B_a / (B_a + B_b)$$

$$\beta = B_b / A_a = B_b / (B_a + B_b)$$

#### **Example 2.11:**

Data are available for the same year  $t_0$  in both classification formats, A and B:

Classification A (old classification)			A → B split ratio	Classification B (new classification)		
Code	Descriptor	Production quantity ( $t_0$ )		Code	Descriptor	Production quantity ( $t_0$ )
$A_a$	wheat	2,000,000 tons	$\alpha$	$B_a$	wheat, durum	1,200,000 tons
			$\beta$	$B_b$	wheat, other	800,000 tons

Conversion coefficients (or split ratios) are calculated as follows:

$$\alpha = 1,200,000 / (1,200,000 + 800,000) = 0.6$$

$$\beta = 800,000 / (1,200,000 + 800,000) = 0.4$$

Coefficients may be applied to any other period  $t$ . For example, to backcast old time series in accordance with the new classification, it is possible to apply split ratios throughout the series (on the assumption that split ratios are constant over the years; the impact of this assumption on data quality should be considered).

**Example 2.12:**

To backcast old time series from A to B for year t, split ratios from year  $t_0$  are applied:

Classification A (old classification)			A → B split ratio	Classification B (new classification)		
Code	Descriptor	Production quantity (t)		Code	Descriptor	Production quantity (t)
A <sub>a</sub>	wheat	1,800,000 tons	0.6	B <sub>a</sub>	wheat, durum	0.6 * 1,800,000 = <b>1,080,000 tons</b>
			0.4	B <sub>b</sub>	wheat, other	0.4 * 1,800,000 = <b>720,000 tons</b>

Production quantities 1,080,000 tons and 720,000 tons are the backcast data from Classification A to Classification B in year t, based on conversion coefficients calculated in year  $t_0$ .

**Many-to-many correlation**

This is the most difficult case. It implies several decisions based on a number of considerations, notably: the statistical domain of application, the purpose of data conversion, the potential use of the converted data and, finally, the cost and the resources available.

Some techniques for calculating or estimating conversion factors are described in the following methodological documents (e.g. targeted for backcasting):

- recalculation from microdata (Roulin & Eidmann, 2013);
- macro approach or proportional approach (Roulin & Eidmann, 2013);
- iterative proportional fitting (Piersimoni, 2011); and
- Bayesian interpolation method (Piersimoni, 2011).

However, it is noted that these methods may be difficult to apply, costly, and in some cases result in low data quality, as also pointed out by the authors above. Alternative solutions are presented in Case 2 below.

**Case 2: Data are not available in both classification formats for at least one reference period**

If data are not available in both classification formats, as only the target classification B will be used for *future* data collection – or if the solutions mentioned above are not feasible – it may be necessary to:

- Introduce breaks in time series. Since data may no longer be comparable over time, it is important to assess what type of data will be affected by the breaks. In some cases, breaks in the series may significantly impact users and some form of mitigation must be provided to enable data mapping across formats. In cases where the impact on data quality is minor, the introduction of breaks in the series could be a viable option.
- If data comparability and the continuity of time series are necessary conditions, then alternative options are:
  - estimating conversion factors based on additional information available (such as expert knowledge), or applying simplified conversion factors (such as equal shares)
  - identifying the most appropriate code in the target classification, based on assumptions and statisticians' best judgment, and developing one-to-one or many-to-one links from source to target classification based on the predominant link; the advantage of this solution lies in its cost effectiveness, and the process followed should be reflected in the metadata (UNSD, 2012a).



**BOX 8****Remarks/Tips 5**

- Since errors, approximation or an inability to assign a value are likely to be introduced when converting data from one classification to another, it is important to clarify the objectives, the data involved, and the cost and benefits of the exercise from the very beginning.
- It is recommended to collect data in both versions for at least one year and then attempt reclassification.
- When split ratios are not reliable, then breaks in time series or reclassification based on best judgment may be necessary.
- The introduction of breaks in time series or reclassification based on best judgment should also be taken into account as a possibility when data availability is limited and the estimation of split ratios is likely to introduce major errors.

## 2.4 DATA CONVERSION TO CPC IN FAO'S NEW STATISTICAL WORKING SYSTEM

The FAO Statistics Division (ESS) is revising the classification system currently used in FAOSTAT and, with regard to agricultural commodities, replacing the FAOSTAT Commodity List (FCL) with the CPC<sup>10</sup>. Changing FAOSTAT's classification system is a challenging process which potentially affects statistics at the very core of FAO's mandate. Therefore, it requires significant resources and major collaborative efforts among FAO's Divisions and between FAO and other IOs. Implementation of the CPC in FAOSTAT is a long-term activity, which is still ongoing (Ramaschiello & Vannuccini, 2015a).

It is planned to use the CPC for future data collection and for application to old time-series, to enable data comparability over time and avoid breaks in the FAOSTAT series.

This Section presents the solutions adopted by ESS to reclassify time series in FAOSTAT according to the CPC. In the following paragraphs, the FCL is indicated as the source classification and the CPC as the target classification<sup>11</sup>.

For data backcasting, although it would be ideal to have double-coded data for at least one year, it appeared to be difficult for FAO to request further data of countries: placing additional burdens on national offices risked lowering the response rate and hampering the data collection process. Because split ratios could not be calculated and applied (the data was not available in both FCL and CPC formats for all commodities), ESS identified alternative solutions to enable progress in changing the classification and data backcasting, while at the same time reducing the costs of the operation. The solutions adopted in individual cases depended on the type of link encountered; in any case, it was possible to achieve full alignment between the FCL and the CPC.

In particular, one-to-one links between FCL and the CPC were ensured for all commodities, based on the predominant link. The conversion keys used were 1 and 0 exclusively.

Conversion coefficients can be calculated in the future, if data in both formats (FCL and CPC) become available. The FCL-CPC conversion table may then be revised accordingly.

When converting data from FCL (the old or source classification) to CPC (the new or target classification):

- **one-to-one** cases are resolved relatively easily, as old data are transferred to the new classification: in other words, codes and definitions are re-assigned according to the new classification while the data remain the same.

### Example 2.13:

Data conversion from FCL to CPC in case of one-to-one link

Source classification (FCL)			FCL→CPC split ratio	Target classification (CPC ver.2.1)		
Code	Descriptor	Data (old format) production quantity		Code	Descriptor	Data (new format) production quantity
0125	cassava	4,082,903 tons	1	01520	cassava	4,082,903 tons

*The data are provided as an example and refer to the production of cassava in Cameroon, 2011 (source: FAOSTAT)*

- In the case of **many-to-one** relations, the data in the target classification (CPC) are an aggregation of items in the source classification (FCL).

<sup>10</sup>For further information on CPC and FCL, see Section 3.4.

<sup>11</sup>Another example of adaptation of the CPC for sectoral application is the UN List of Industrial Commodities, used in the UNSD Database of Industrial Commodities (UNSD, n.d.-g).

**Example 2.14:**

Data conversion from FCL to CPC in case of many-to-one link

Source classification (FCL)			FCL→CPC conversion factor	Target classification (CPC ver.2.1)		
Code	Descriptor	Data (old format) production quantity		Code	Descriptor	Data (new format) production quantity
0430	okra	<b>5,784,000 tons</b>	1	01239	other fruit-bearing vegetables	5,784,000 + 27,557,000 = <b>33,341,000 tons</b>
0463	other vegetables	<b>27,557,000 tons</b>	1			

The data are provided as an example and refer to the production of okra and other fresh vegetables in India, 2011 (source: FAOSTAT)

In many-to-one links, data conversion leads to a loss of detail in the new format compared to the old one. To avoid losing information in FAOSTAT, many-to-one cases were transformed into one-to-one relations. First, the target classification was expanded in accordance with the level of detail available in the FAOSTAT commodity list (in Example 2.15 below, new CPC expanded codes 01239.01 and 01239.90). Next, the “key method” (see Example 2.13 above) was applied.

**Example 2.15:**

Data conversion from FCL to CPC in the case of a many-to-one type of link turned into one-to-one relations (the codes in bold orange type are the CPC expanded codes that were developed by the FAO for FAOSTAT purposes)

Source classification (FCL)			FCL→CPC conversion factor	Target classification (CPC ver.2.1 expanded)		
Code	Descriptor	Data (old format) production quantity		Code	Descriptor	Data (new format) production quantity
0430	okra	<b>5,784,000 tons</b>	1	<b>01239.01</b>	okra	<b>5,784,000 tons</b>
0463	other vegetables	<b>27,557,000 tons</b>	1	<b>01239.90</b>	other fruit-bearing vegetables n.e.c.	<b>27,557,000 tons</b>

The data are provided as an example and refer to the production of okra and other fresh vegetables in India, 2011 (source: FAOSTAT).

The data for one-to-many and many-to-many types of links were converted on the basis of statisticians’ best judgment, and in accordance with the *predominant* correspondence. As mentioned, conversion coefficients were not calculated, due to the lack of information in both formats for at least one year and, therefore, the risk of threatening data quality when converting.

- **One-to-many** relations between the FCL and the CPC concerned principally agricultural (primary) products, rather than manufactured (processed) ones. For example, in the FCL, fresh and dried fruit are often classified together, but are separate in the CPC. This is because the CPC is closely linked to the ISIC, in which dried fruit is considered an output of the manufacturing industry and not of agriculture (unless sun-dried). In FAOSTAT, the solution adopted for data conversion was to associate FCL data only to items in the agricultural section of the CPC, leaving blanks for data corresponding to the manufactured goods section.

In Example 2.16 below, the one-to-many relation was converted into a one-to-one link, assigning a conversion factor of “1” to the class that, based on the statistician’s best judgment, best represented the FCL’s boundaries (predominant correspondence).

**Example 2.16:**

Data conversion from FCL to CPC in a one-to-many link

Source classification (FCL)			FCL→CPC conversion factor	Target classification (CPC ver.2.1 expanded)		
Code	Descriptor	Data (old format) production quantity		Code	Descriptor	Data (new format) production quantity
0577	dates (fresh+dried)	724,894 tons	1	01314 (agriculture)	dates, fresh	724,894 tons
			0	214190.03 (manufacturing)	dates, dried	0

The data are provided as an example and refer to the production of dates in Algeria, 2011 (source: FAOSTAT)

In the metadata, it may be noted that in some years and for certain countries, code 01314 may also include information on dried dates.

- In **many-to-many** cases, which constitute a minority of cases in FCL-CPC correlations, an additional operation is necessary to adjust the target classification to the source one.

In Example 2.17 below, the source classification includes the “subtropical fruit” component under “fruit fresh n.e.s.” while, in the target classification, subtropical fruit is classified with “tropical fruit n.e.s.”. This generates a mismatch between the two classifications.

**Example 2.17:**

Many-to-many relations between FCL and CPC concerning tropical, subtropical and other fruit n.e.c.

Source classification (FCL)		Target classification (CPC ver.2.1 expanded)	
FCL code	FCL descriptor	CPC code	CPC descriptor
0603	fruit tropical fresh, n.e.s. (excl. subtropical)	01319	other tropical and subtropical fruits, n.e.c. (incl. subtropical)
0619	fruit fresh, n.e.s. (incl. subtropical)		
		01359.90	other fruits, n.e.c. (excl. subtropical)

Given the impossibility of estimating split ratios and not introducing – at this stage – breaks in the series, the target classification is adapted and aligned to the source one: CPC subclasses have been redefined in accordance with FAOSTAT. In particular, to maintain one-to-one linkages between the FCL and the CPC, the subtropical fruit component in the CPC is moved with “other fruits n.e.c.” (Item 01359.90 in the examples). The information in the metadata is adjusted accordingly.

**Example 2.18:**

Data conversion from FCL to CPC in case of many-to-many links

Source classification (FCL)			FCL→CPC conversion factor	Target classification (CPC ver.2.1 expanded)		
Code	Descriptor	Data (old format) production quantity		Code	Descriptor	Data (new format) production quantity
0603	fruit tropical fresh, n.e.s.	<b>52,684 tons</b>	1	01319	other tropical fruits, n.e.c. ( <b>excluding</b> subtropical fruits)	<b>52,684 tons</b>
0619	fruit fresh, n.e.s. (incl. subtropical)	<b>193,686(E) tons</b>	1	01359.90	other fruits, n.e.c. ( <b>including</b> subtropical fruits)	<b>193,686(E) tons</b>

*The data are provided as an example and refer to the production of tropical fruit n.e.s. and fruit n.e.s. in Ecuador, 2011 (source: FAOSTAT); (E) = FAO estimates*

The approach described above was identified as a solution that allowed FAO to progress with the classification change while also reduce the costs of the operation. Indeed, the cost of backcasting time series for all of the world's countries to the 1960s by calculating split ratios would have been extremely high, and the expected quality of the data was low. However, it is possible to consider calculating split ratios in the future, if data in both formats become available.



# 3

## International classifications for agricultural statistics

### 3.1 INTERNATIONAL CLASSIFICATIONS FOR AGRICULTURAL STATISTICS

There is no standard definition of the boundaries of the agricultural statistics system, nor is there only one classification for agricultural statistics. On the contrary, a number of international statistical classifications (of both general and specific scope) exist to provide information relating to agriculture, and describe the sector from different perspectives. For the purposes of these Guidelines, the boundaries of agricultural statistics comprise agriculture, fisheries and aquaculture, forestry, natural resources and rural development.

The international classification schemes for agricultural statistics presented in this Section encompass economic activities, products, expenditures, occupation, land use, land cover, education, crops, aquatic animals and plants species and other classifications related to fisheries statistics. They are used for several different applications and purposes, from data collection to data compilation, dissemination, and analysis.

International classifications are maintained by international organizations, which act as custodians. These organizations are, among others, FAO, the UN, the International Labour Organization (ILO), the WCO, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Health Organization (WHO), the United Nations Office on Drugs and Crime (UNODC).

In international classifications, the level of detail available may not always be sufficient for sectoral applications, or the groupings established may not be suitable to all applications. However, this should not dissuade organizations from using international standards. Indeed, customization is often possible, either by increasing detail at the lower levels or by developing alternative aggregations of the higher-level categories. Customization may be undertaken at country level (see the examples provided in the Annex) and by international organizations themselves. For example, FAO and the UNSD have developed further detail in the CPC for agricultural statistics (see “CPC expanded for agricultural statistics”, Section 3.4 below). FAO has also designed alternative aggregates in the CPC for the purposes of the FAOSTAT database<sup>12</sup> (see Section 2.4).

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<sup>12</sup> The database may be accessed at <http://faostat.fao.org/>.

This Chapter aims to provide guidance on the major international classifications relevant to agricultural statistics. For each classification listed below, six main features are examined (what, when and who, versions, purpose and applications, sections on agriculture, structure) and summarized in Table 3.1 below.

A note of caution: the categories on agriculture provided in the following sections should not be considered as exhaustive. They are meant to provide an indication exclusively; additional or different codes can be selected as needed and according to context."

**TABLE 3.1**  
**International classifications for agricultural statistics**

Classification	Object	Year of development	Latest update	Number of levels	Custodian
<b>ISIC</b>	Economic activities	1948	2006/2008	4	UN
<b>CPC</b>	All products (including services)	1989	2015	5	UN
<b>SITC</b>	Products (goods only)	1950	2006	5	UN
<b>HS</b>		1988	2012	3 (6 digits)	WCO
<b>COICOP</b>	Expenditure according to purpose (individual consumption)	1999	2000	3 (4 digits)	UN
<b>COFOG</b>	Expenditure according to purpose (functions of govt)	1980	2000	3 (4 digits)	UN
<b>ISCO</b>	Occupation	1957	2008	4	ILO
<b>ICSE</b>	Employment	1958	1993	1 (flat)	ILO
<b>ISCED</b>	Education	1970	2011	3	UNESCO
<b>SEEA classification for land use</b>	Land use	2012	2012	4	UN
<b>SEEA classification for land cover</b>	Land cover	2012	2012	1	UN
<b>FAO classifications for the WCA</b>	Crops, livestock, machinery and equipment, land use	2005 (WCA 2010)	2005 (WCA 2010)	2 to 4	FAO (ESS)
<b>FAO classifications for fisheries and aquaculture</b>	ISSCAAP	since the 1960s	2001	2	FAO (FIPS)
	ASFIS		2014	1	
	FAO Major Areas for Statistical purposes		2003	1	
	ISSCFG		endorsed in 2013 (yet to be published)	2	
	ISSCFV		1984	2	
	ISSCFC		2014	6	



### 3.2 LINK TO THE GLOBAL STRATEGY'S MINIMUM SET OF CORE DATA

The Global Strategy to Improve Agricultural and Rural Statistics is based on three main pillars:

1. establishing a minimum set of core data that countries should collect
2. integrating agricultural statistics into NSSs
3. ensuring the sustainability of the agricultural statistical system through governance and statistical capacity building

The use of international statistical classifications enables data comparability across countries, improves data quality and is functional to the fulfilment of all of the Global Strategy's pillars because:

1. data quality and the comparability of core data is ensured by the adoption of standard concepts and definitions
2. agricultural statistics are integrated into NSSs when the classifications used for agricultural statistics are compatible and related to those used in other sectors and by different national institutions
3. capacity development on statistical classifications is critical to ensure the correct application of statistical classifications (training material will be produced by the Global Strategy in a follow-up phase to these Guidelines)

With particular reference to the first pillar of the Global Strategy, the minimum set of core data is composed of a **critical group of variables and indicators** that countries should collect to produce key information on agricultural and rural statistics and establish the **framework** for the agricultural and rural component of the National Strategies for the Development of Statistics (NSDS). This set of core data will constitute the building blocks to establish methodologies and to integrate agriculture and rural statistics into the NSS (WB et al., 2010).

In the Global Strategy, consultations are currently ongoing to identify an improved list of core data. The selection is based on their relevance at global level, because the global statistical system requires them to monitor issues that transcend national boundaries. For example, the data should provide inputs for the national accounts and global balances of supply and demand for food and other agricultural products; core data items that are crops should account for a major proportion of land use, contribute significantly to farm and rural household well-being, and have an effect on the environment and climate. "A core item should be the first to be included in the statistical system and the last to be removed as a result of budget shortfalls" (WB et al., 2010).

Once the set of core data is agreed at international level, this Section will be updated to draw further links between current work on classifications and the Global Strategy's action plan, providing indications on the international classifications and other standards to be used when collecting the recommended set of core data for agricultural and rural statistics.

### 3.3 THE INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION OF ALL ECONOMIC ACTIVITIES<sup>13</sup>

#### Identifier and current version

ISIC Rev.4

#### What

- Classification depending on the kind of *productive activity* performed by units **engaged in economic production**, e.g. *enterprises* or *establishments*.
- A *productive activity* is defined as an economic activity falling within the production boundary of the System of National Accounts (SNA): it is the type of production in which units engage.
- According to the SNA, *economic production* is an activity that is carried out under the responsibility, control and management of an institutional unit, which uses labour, capital, and goods and services inputs to produce outputs of goods and services.
- Enterprises and establishments are *statistical units* within the SNA; other statistical units are kind-of-activity units, local units, and units of homogeneous production:
  - *enterprise*
    - this is an **institutional unit**, in its capacity as a producer of goods and services
    - it is an **economic transactor** which enjoys autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services
    - it may be engaged in **one or more economic activities in one or more locations**
    - it may be a **sole legal unit**
    - it is the **smallest legal unit** and may be a corporation (or quasi-corporation), a non-profit institution or an unincorporated enterprise
  - *establishment*:
    - this is an **enterprise or a part of an enterprise** that is situated in a **single location**, and in which only a **single** (non-ancillary) **productive activity** is carried out
    - it is an economic unit that engages, under a single ownership or control – i.e. under a single legal entity – in one, or predominantly one, kind of economic activity in a single physical location (e.g. a mine, factory or workshop)
    - one or more secondary activities may be carried out within it, but these should be small in scale compared to the principal activity<sup>14</sup>
    - the concept of establishment combines both a kind-of-activity dimension and a locality dimension, based on the assumption that the aim of the statistical programme is to compile data that is classified both by activity and by geographical region
  - *kind-of-activity unit*: this is an enterprise or a part of an enterprise that engages in **only one kind of productive activity**, or in which the principal productive activity accounts for most of the value added (there is homogeneity of activity and no restriction on the geographical area in which the activity is carried out)
  - *local unit*: this is an enterprise or a part of an enterprise that engages in productive activity in or from one location (there is no reference to the kind of activity carried out)
    - when the criteria of the kind-of-activity unit and the local unit are combined, the resulting concept corresponds to the operational definition of the establishment

<sup>13</sup> See UNSD (2014).

<sup>14</sup> If a secondary activity within an establishment is as important, or almost as important, as the principal activity, then the unit is more likely a local unit; it should be subdivided so that the secondary activity is treated as taking place within an establishment that is separate from that in which the principal activity is performed.

- *unit of homogeneous production*: this is a production unit in which only one (non-ancillary) productive activity is performed (independent of the activity's location); it is the appropriate analytical unit for the purposes of input-output analyses<sup>15</sup>.
- A set of production units engaged in the same or similar kind of productive activity are classified in the same ISIC category, to form *industries*.
- Although information on inputs, processes, technologies of production, characteristics and output uses are taken into account, ISIC does not focus on the following:
  - the intrinsic characteristics of the goods or the nature of the service rendered (a main criterion in the CPC)
  - the type of ownership of a producing unit, or the type of legal organization or mode of operation (unlike the SNA's classification of institutional sectors)
  - technological developments and distinctions between modern and traditional production methods (not relevant in ISIC<sup>16</sup>)
  - formal vs. informal sector, legal vs. illegal activities, market vs. non-market activities (which is instead a feature of the SNA).
- ISIC is used throughout the world to develop regional classifications (or in conjunction with regional classifications):
  - **NACE** is the *Nomenclature Générale des Activités Economiques dans les Communautés Européennes* (Statistical Classification of Economic Activities in the European Communities) (see the Annex, section A1.3); developed in the 1970s, it is closely related to ISIC (since the version launched in 1990) in terms of both structure and of coding system. At higher levels, the two classifications are identical, while NACE is more detailed at lower levels.
  - **NAICS**<sup>17</sup> is the North American Industry Classification System; it was developed in the 1990s and, since then, has undergone numerous reviews to improve comparability between the its three custodians (the US, Canada, and Mexico). At the same time, work conducted to develop NAICS provided significant input for updating ISIC; as of today, the structure of the two classifications appear substantially different, although definitions of individual categories have been designed in such a way that statistical data collected on the basis of NAICS can be aggregated into ISIC Rev.4's two-digit divisions.
  - **ANZSIC** is the Australian and New Zealand Standard Industrial Classification; revised in 2006, it broadly aligns with ISIC Rev.4 so that categories at the division and more detailed levels can be aggregated into ISIC's two-digit categories.

### When and who

- The ISIC is the first international classification, developed and adopted in 1948 by the UNSC.
- Its custodian is the UNSD.

### Versions

- Currently in use: Rev.4 (2008)
- Previous versions: Original (1948), Rev.1 (1958), Rev.2 (1968), Rev.3 (1989), Rev.3.1 (2002)
- Next version: to be determined by the EG

### Purpose and applications

- ISIC is applied in various domains: statistical, economic and administrative (e.g. tax collection, business licences)
- Censuses and surveys of industry and economic activities
- Household surveys

<sup>15</sup> If it is sought to compile production accounts and input-output transaction tables by region, units of homogeneous production located in different places must be treated as separate units, even though they may be engaged in the same activity and belong to the same institutional unit.

<sup>16</sup> Some countries may wish to make such a distinction significant; they may thus adapt the classification accordingly.

<sup>17</sup> For further information on NAICS, see [www.naics.com/history-naics-code/](http://www.naics.com/history-naics-code/).

- Labour force surveys
- Monitoring, analysis, and evaluation of an economy’s performance over time
- Compilation of national accounts

**BOX 9**  
**Historical insights on ISIC**

Statistical classifications have been on the agenda of the UNSC since its inception in 1947. At that time, the priority was the development of a common classification for industrial activities. At its first meeting in 1947, the UNSC declared:

*“[t]he question of securing, as far as possible, comparability in the statistics of different countries with regard to what is generally called industrial classification of all branches of economic activity should receive urgent consideration.\*”*

The UNSC thus appointed a committee of experts to advance proposals specifically on standard industrial classification. The first draft of ISIC, now at its fourth revision, was developed and submitted to the UNSC one year later, in 1948. The Economic and Social Council adopted Resolution 149 A (VII) of August 1948 according to which:

*“[the Economic and Social Council] recommends that all Member Governments make use of the International Standard Industrial Classification of Economic Activities either by adopting this system of classification as a national standard, or rearranging their statistical data in accordance with this system for purposes of international comparability.”*

A great deal of progress has been made since then. However, the UNSC has constantly considered classifications to be a priority area for statistical cooperation at international level, recognizing that an *“essential requisite for any real comparability is the greatest possible extent of uniformity of definitions and classifications.”\**

\*Source: Report of the first session of the UNSC

**Structure**

- ISIC follows a four-level structure, with each level marked by a specific alphanumeric code:

A - U	Section
XX	Division
XXX	Group
XXXX	Class

**Sections on agriculture**

- ISIC includes agriculture, forestry, fishery/aquaculture, and related manufacturing activities; manufacturing activities of fertilizers, pesticides and agricultural machinery. It also includes food and beverage service activities. The divisions are the following:

Divisions:

- 01 - Crop and animal production, hunting and related service activities
- 02 - Forestry and logging
- 03 - Fishing and aquaculture
- 10 - Manufacture of food products
- 11 - Manufacture of beverages
- 12 - Manufacture of tobacco products
- 13 - Manufacture of textiles
- 16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 17 - Manufacture of paper and paper products
- 20 - Manufacture of chemicals and chemical products
- 28 - Manufacture of machinery and equipment n.e.c.
- 31 - Manufacture of furniture
- 46 - Wholesale trade [...] (of agricultural raw materials and live animals, of food, beverages and tobacco, machinery, fertilizers)
- 56 - Food and beverage service activities

**BOX 10**  
**Agriculture in ISIC Rev.3.1 and ISIC Rev.4**

In ISIC Rev.4, the categories concerning agriculture, fishing and forestry have been substantially revised since Rev.3.1. At the higher level, the ISIC Rev.3.1 sections for “A – Agriculture, hunting and forestry” and “B – Fishing” were combined into “A – Agriculture, forestry and fishing”.

Revised Section A in ISIC Rev.4, compared to Rev.3.1:

ISIC Rev.3.1		ISIC Rev.4	
<b>A</b>	<b>Agriculture, hunting and forestry</b>	<b>A</b>	<b>Agriculture, forestry and fishing</b>
01	Agriculture, hunting and related service activities	01	Crop and animal production, hunting and related service activities
02	Forestry, logging and related service activities	02	Forestry and logging
<b>B</b>	<b>Fishing</b>	03	Fishing and aquaculture
05	Fishing, aquaculture and service activities incidental to fishing		

Under the new Section A, the level of detail was substantially increased, also to align the structure with CPC Ver.2 (sometimes introducing partial links between ISIC Rev.3.1 and Rev.4). FAO has provided a substantial contribution to the ISIC review process, in response to the need for more detail in agricultural statistics.

Example of increased detail in Rev.4 compared to Rev.3.1:

ISIC Rev.3.1		ISIC Rev.4		
Code	Descriptor	Code	Part. link	Descriptor
111	Growing of cereals and other crops n.e.c.	111		Growing of cereals (except rice), leguminous crops and oil seeds
		112		Growing of rice
		113	*	Growing of vegetables and melons, roots and tubers
		114		Growing of sugar cane
		115		Growing of tobacco
		116		Growing of fibre crops
		119	*	Growing of other non-perennial crops
		126	*	Growing of oleaginous fruits, except coconuts or olives
		128	*	Growing of: hops; plants used chiefly in pharmacy or for insecticidal, fungicidal or similar purposes
		129	*	Growing of rubber trees; growing of vegetable materials primarily used for plaiting
163	*	Preliminary processing of tobacco leaves		

Correspondence tables between ISIC Rev.3.1 and ISIC Rev.4 are available on the UNSD website (see in particular <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60&Lg=1>).

## 3.4 THE UN CENTRAL PRODUCT CLASSIFICATION (CPC) AND FAO'S EXPANSION FOR AGRICULTURE<sup>18</sup>

### Identifier and current version

CPC Ver.2

### What

- The CPC is a comprehensive classification of *products* into a system of categories that are both exhaustive and mutually exclusive. It is based on a set of internationally agreed concepts, definitions, principles and classification rules.
- The term “products” follows the SNA definition, i.e. *all output of economic activities* that can be the object of domestic or international transactions or that can be entered into stocks, including transportable goods, non-transportable goods, services and other products.
- The CPC is highly compatible with the HS and ISIC:
  - **HS** subheadings are used as building blocks for the goods part of the CPC, because the HS is a detailed classification of transportable goods that is accepted for use in international trade statistics by all countries; and
  - alignment with **ISIC** is ensured because the CPC classifies products on the basis of the products' *physical properties and intrinsic nature*, as well as of the principle of *industrial origin* (although the products may sometimes be outputs of several ISIC industries).
- The CPC is a *general-scope classification*, meaning that it covers products of all economic activities (and is therefore not sector-specific) but can be customized for sectoral applications; it is also a general-purpose classification, so that it may be potentially applied in fields ranging from production to trade, prices and consumption.
- The latest version of the CPC (Ver.2.1) includes an official annex developed by FAO to meet the needs of agricultural statistics called the *CPC expanded for agricultural statistics*.
- The expanded CPC provides additional detail on agricultural commodities (primary products) and is obtained by adding two digits to the lower level of the standard CPC (Ramaschiello, 2011).

### When and who

- The CPC's custodian is the UNSD.
- The first provisional version was approved by the UNSC in 1991.
- The *CPC expanded for agricultural statistics* is an official annex to the CPC Ver.2.1; it was developed by FAO and endorsed in 2013 by the UNSD, the EG and the UNSC.

### Versions

- Version currently in use: Ver.2.1 (2015)
- Previous versions: Provisional CPC (1991), Ver.1.0 (1998), Ver.1.1 (2002), Ver.2 (2008)
- Next version: to be scheduled

### Purpose and applications

- The CPC is used for data collection (e.g. in production surveys) and as an instrument for assembling and tabulating all types of statistics that involve products, such as statistics on production, intermediate and final consumption, capital formation, foreign trade, prices and national accounts.
- It provides a framework for the international comparison of statistics concerning products.
- It serves as a guide for developing or revising existing classification schemes of products to make them compatible with international standards.

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<sup>18</sup> UNSD (2015).

## BOX 11 Historical insights on the CPC

The CPC originated from an initiative of the UN and other international bodies in the early 1970s to *harmonize* international classifications of products worldwide.

In 1976, at its Nineteenth Session, the UNSC approved a programme to harmonize the existing activity classifications of the UN, the European Communities and the Council for Mutual Economic Assistance, and to simultaneously develop a system of *different* but *interrelated* classifications of goods and services. The new classification, which covered both goods and services, was intended to constitute a basic tool within this programme.

Only ten years later, in 1987, the UNSC (at its Twenty-fourth Session), reviewed the *first complete draft of the CPC*. Pursuant to the UNSC's recommendations, work on the CPC continued in cooperation with a number of international organizations, in particular EUROSTAT and the OECD. The services part of the CPC was developed by the Voorburg Group on Services Statistics.

At its Twenty-fifth Session in 1989, the UNSC considered the *final draft* and approved its publication as a provisional document. The Commission recommended that Member States begin testing the *Provisional CPC* to gain experience in obtaining internationally comparable data on goods and services. The classification was subsequently published by the UN in 1991.

## Structure

- The CPC adopts a five-level structure, consisting purely of decimal codes:

X	Section
XX	Division
XXX	Group
XXXX	Class
XXXXX	Subclass

- In the CPC, the code numbering consists of 5 digits without any type of separation between digits; this distinguishes it from, among others, the SITC, another UN classification that follows a five-digit code but uses a decimal point to separate the third and fourth digits.
- The *CPC expanded* adds two more digits at the lower level, separated by a decimal point: e.g. 01111.01 (a further seven-digit level).

## Sections on agriculture

- These include agriculture, forestry, fishery/aquaculture products and related manufacturing products; fertilizers, pesticides and agricultural machinery; it also includes food and beverages services and support services to agriculture, hunting, forestry and fishing. In particular, the Divisions are as follows:

Divisions:

01 - Products of agriculture, horticulture and market gardening

02 - Live animals and animal products (excluding meat)

03 - Forestry and logging products



- 04 - Fish and other fishing products
- 16 - Other minerals (fertilizers)
- 21 - Meat, fish, fruit, vegetables, oils and fats
- 22 - Dairy products and egg products
- 23 - Grain mill products, starches and starch products; other food products
- 24 - Beverages
- 25 - Tobacco products
- 26 - Yarn and thread; woven and tufted textile fabrics
- 31 - Products of wood, cork, straw and plaiting materials
- 32 - Pulp, paper and paper products; printed matter and related articles
- 33 - Coke oven products; refined petroleum products; nuclear fuel
- 34 - Basic chemicals
- 38 - Furniture; other transportable goods n.e.c. (prefabricated buildings made of wood)
- 39 - Wastes or scraps
- 44 - Special purpose machinery
- 61 - Wholesale trade services (of agricultural raw material, live animals, food, beverage and tobacco, chemicals and machinery)
- 63 - Accommodation, food and beverage services
- 86 - Support services to agriculture, hunting, forestry, fishing, mining and utilities

#### **BOX 12** **The FAOSTAT Commodity List (FCL)**

The FCL is the classification of commodities that has been used in FAOSTAT since the **1960s**. It was originally based on the UN's SITC. It includes 683 commodities grouped in 20 chapters and covers crops, livestock and their derived products. It excludes agricultural inputs (such as fertilizers, pesticides and machinery) and fishery and forest products. FAOSTAT uses different classifications and lists for these products.

The purpose of the FCL is to provide a framework for collecting and analysing data on production and trade and, ultimately, to compile the Supply Utilization Accounts and Food Balance Sheets (SUA/FBS) for the estimation of undernourishment.

Its structure follows the pattern of the so-called "**commodity tree**", in which the parent item is the primary commodity (e.g. wheat) and the children items are its derived products (e.g. flour made from wheat).

At the time of writing, the new FAOSTAT statistical working system is under development and testing. It will replace the FCL and use the CPC, expanded for agriculture. This will ensure better alignment to international standards and the integration of all FAOSTAT product lists into a single structure.

Details on the FCL's structure and definitions are available on the website of the FAO Statistics Division: <http://www.fao.org/waicent/faoinfo/economic/faodef/faodefe.htm>.

## 3.5 THE STANDARD INTERNATIONAL TRADE CLASSIFICATION (SITC)<sup>19</sup>

### Identifier and current version

SITC Rev.4

### What

- The SITC is an international merchandise trade classification.
- Its groups reflect the materials used in production, the processing stage, market practices, the uses of the products, the importance of the commodities in terms of world trade and technological changes.
- The SITC uses the HS subheadings as building blocks; correspondence tables link it to ISIC and the CPC.

### When and who

- The first version of the SITC was developed by the UN in 1950.
- It is currently maintained by the UNSD.

#### BOX 13

##### Historical insights on the SITC

In the **1930s**, significant developments took place to ensure greater comparability of international merchandise trade statistics. In **1938**, the League of Nations (the UN's predecessor) published the *Minimum List of Commodities for International Trade Statistics*, based on the 1937 revision of the League's Draft Customs Nomenclature.

After the UN was founded, the UNSC, at its Third Session, recommended a revision of the Minimum List, in light of the many changes that occurred over the years and new emerging needs. The *Original SITC* structure was developed in **1950**.

By **1960**, many countries compiled international merchandise trade data according to the Original SITC; some countries also used SITC as the basis for their customs nomenclatures.

However, at the same time, in many European countries and beyond, national customs tariff nomenclatures were based on the 1955 *Brussels Tariff Nomenclature* (BTN) of the Customs Cooperation Council (the WCO's predecessor). The BTN was an internationally recognized nomenclature in which products were identified according to the material from which they were made, as in the tradition of customs nomenclatures. To enable harmonization between the original SITC and the BTN, the SITC Revised was prepared in **1961**. A number of revisions have followed since then. In particular, SITC Rev.3 was developed beginning in 1981-85, in parallel with the first version of the HS which entered into force in 1988. SITC Rev.3 employed HS headings as building blocks, while maintaining – to the extent possible – continuity with previous SITC versions and harmonization with the CPC and ISIC.

In **1993**, the UNSC endorsed the use of HS at the national level for the *compilation* and *dissemination* of international merchandise trade statistics; the SITC was recognized as the tool of reference for *analysis*. Compared to the structure of the HS, that of the SITC is less detailed but provides a set of groups that are relevant to economic statistics. In the HS, goods are classified according to the material from which they are made, while in the SITC, the goods are grouped by stage of fabrication and industry of origin.

<sup>19</sup> UNSD (n.d.-f).

## Versions

- Version currently in use: Rev.4 (2006)
- Previous versions: first version (1950), Rev.1 (1961), Rev.2 (1974), Rev.3 (1985)
- Next version: not planned

## Purpose and application

- The SITC was once used as the basis for customs nomenclatures and for data collection at customs level.
- Currently, it is used more often as an analytical tool and to present international merchandise trade statistics.

## Structure

- The SITC adopts a five-digit structure:

X	Section
XX	Division
XXX	Group
XXX.X	Subgroup
XXX.XX	Basic heading

## Sections on agriculture

- The SITC includes agriculture, forestry, fishery/aquaculture products and related manufacturing products; fertilizers, pesticides and agricultural machinery. The Divisions are the following:

Divisions:

00 - Live animals other than animals of division 03

01 - Meat and meat preparations

02 - Dairy products and birds' eggs

03 - Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof

04 - Cereals and cereal preparations

05 - Vegetables and fruit

06 - Sugars, sugar preparations and honey

07 - Coffee, tea, cocoa, spices, and manufactures thereof

08 - Feeding stuff for animals (not including unmilled cereals)

09 - Miscellaneous edible products and preparations

11 - Beverages

12 - Tobacco and tobacco manufactures

21 - Hides, skins and furskins, raw

22 - Oil-seeds and oleaginous fruits

23 - Crude rubber (including synthetic and reclaimed)

24 - Cork and wood

25 - Pulp and waste paper

26 - Textile fibres (other than wool tops and other combed wool) and their wastes (not manufactured into yarn or fabric)

29 - Crude animal and vegetable materials, n.e.s.

41 - Animal oils and fats

42 - Fixed vegetable fats and oils, crude, refined or fractionated

43 - Animal or vegetable fats and oils, processed; waxes of animal or vegetable origin; inedible mixtures or preparations of animal or vegetable fats or oils, n.e.s.

56 - Fertilizers (other than those of group 272)

- 59 - Chemical materials and products, n.e.s.
- 61 - Leather, leather manufactures, n.e.s., and dressed furskins
- 62 - Rubber manufactures, n.e.s.
- 63 - Cork and wood manufactures (excluding furniture)
- 64 - Paper, paperboard and articles of paper pulp, of paper or of paperboard
- 72 - Machinery specialized for particular industries

## 3.6 THE HARMONIZED COMMODITY DESCRIPTION AND CODING SYSTEM (HS)<sup>20</sup>

### Identifier and current version

HS 2012

### What

- The Harmonized Commodity Description and Coding System is generally referred to as the *Harmonized System* (HS).
- The HS is the most widely used trade nomenclature in the world:
  - It is used by over 200 countries, territories or customs or economic unions;
  - It classifies over 98 per cent of the merchandise exchanged in international trade.
- It is a multipurpose international product (i.e. goods) nomenclature.
- In the HS, commodities are generally classified according to whether they are made of raw or basic material, but also to the degree of processing undergone and, to a minor extent, their use or function and economic activities.
- System maintenance includes measures to secure the uniform interpretation of the HS and its periodic updating in light of developments in technology, changes in trade patterns and new problems beyond trade, such as social and environmental issues.

#### BOX 14

##### The Harmonized System's governance mechanism

The HS is reviewed *every five years*. The WCO manages this process through the *Harmonized System Committee (HSC)*, which is defined in Article 7 of the HS Convention and represents the Contracting Parties to the HS Convention.

Under the HS Committee's overall direction, the *HS Review Sub-Committee (RSC)* operates, with administrative support from the WCO Secretariat.

The HSC meets twice yearly and is preceded by the meeting of the RSC. It examines policy matters, takes decisions on classification questions, settles disputes and prepares amendments to the Explanatory Notes.

The HSC and RSC are attended by WCO member countries; international organizations are also invited to participate with "observer" status. As such, they perform a consultative role but do not have voting power.

Decisions concerning the interpretation and application of the HS, such as classification decisions and amendments to the Explanatory Notes or to the Compendium of Classification Opinions, become effective two months after approval by the HS Committee; decisions on the modification of the legal text, even if approved by the HSC, must be approved at a later stage by the *Council*, the WCO's supreme body.

Member countries have the right to veto the amendment approved by the Council within six months of the Council's decision.

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<sup>20</sup> WCO (2012).

## When and who

- The HS was developed by the WCO in the early 1980s.
- It is governed by the *International Convention on the Harmonized Commodity Description and Coding System*, which was adopted in 1983 and entered into force in 1988.
- It is based on the Brussels Tariff Nomenclature (BTN), which was developed by the Customs Cooperation Council – the WCO’s predecessor – in 1955.
- The HS’s custodian is the WCO, through the HS Committee.
- The HS Convention is binding upon Contracting Parties (which amount to 151 as of September 2014), although many countries and territories use the HS even if they are not Contracting Parties.

## Versions

- Version currently in use: 2012 edition (implemented by 75 per cent of Contracting Parties as of September 2014) (WCO 2014)
- Previous versions: 1988, 1992, 1996, 2002, and 2007
- Next version: 2017 edition; the discussion of proposals on the 2022 edition is already underway at the WCO

## Purpose and applications

- The HS fulfils an administrative purpose: it is the basis for customs tariffs for the collection of import duties and taxes, monitoring of controlled goods, rules of origin, freight tariffs, price and quota control.
- It also performs a statistical purpose: the collection and presentation of trade statistics.
- The HS is used to monitor the social and environmental impact of trade in goods.
- It is often used as a reference classification at international and national level; international statistical classifications, such as the SITC and the CPC developed by the UN, are also aligned to this scheme.

## Structure

### *International standard structure*

- The HS comprises approximately 5,000 commodity groups identified by a six-digit code, arranged in twenty-one Sections and ninety-seven Chapters:

XX	Chapter
XX.XX	Heading
XXXX.XX	Subheading

- To achieve a uniform classification of goods, the HS also contains Notes and General Interpretative Rules and Explanatory Notes:
  - the Notes and General Interpretative Rules are part of the HS’s *legal text* (which means that they are binding upon the contracting parties); while
  - the Explanatory Notes (which consist of 5 volumes in English and French) provide the official interpretation of the HS, but are *not legally binding*; they are not part of the HS’s legal text.

### *National structures*

- The HS’s national structures are developed by expanding the six-digit structure at the lower level and adding as many subheadings as required, reaching up to eight, ten or twelve digits (with or without decimal points)  
Example:
  - with decimal points- 0000.00.00 (8 digits), 0000.00.00.00 (10 digits), 0000.00.00.00.00 (12 digits);
  - without decimal points- 00000000 (8 digits), 0000000000 (10 digits), 000000000000 (12 digits)
- There is no standard structure that countries must follow in developing their national HS, which gives rise to comparability issues across countries at levels lower than 6 digits.

- The WCO provides some (non-binding) recommendations<sup>21</sup> on the application of the HS Convention (WCO, n.d.); in particular, it is recommended that countries:
  - *introduce additional subheadings* to control or monitor trade in certain commodities;
  - *facilitate* the collection, comparison and analysis of international statistics; and
  - *promote* objective, predictable and transparent classification practices.

### Sections on agriculture

- The HS includes agriculture, forestry, fishery/aquaculture products and related manufacturing products; fertilizers, pesticides and agricultural machinery. The Chapters are the following:

Chapters:

01 - Live animals

02 - Meat and edible meat offal

03 - Fish and crustaceans, molluscs and other aquatic invertebrates

04 - Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included

05 - Products of animal origin, not elsewhere specified or included

06 - Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage.

07 - Edible vegetables and certain roots and tubers

08 - Edible fruit and nuts; peel of citrus fruit or melons

09 - Coffee, tea, maté and spices

10 - Cereals

11 - Products of the milling industry; malt; starches; inulin; wheat gluten

12 - Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder

13 - Lac; gums, resins and other vegetable saps and extracts

14 - Vegetable plaiting materials; vegetable products not elsewhere specified or included

15 - Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes

16 - Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates.

17 - Sugars and sugar confectionery

18 - Cocoa and cocoa preparations

19 - Preparations of cereals, flour, starch or milk; pastrycooks' products

20 - Preparations of vegetables, fruit, nuts or other parts of plants

21 - Miscellaneous edible preparations

22 - Beverages, spirits and vinegar

23 - Residues and waste from the food industries; prepared animal fodder

24 - Tobacco and manufactured tobacco substitutes

25 - Salt; sulphur; earths and stone; plastering materials, lime and cement

28 - Inorganic chemicals; [...]

29 - Organic chemicals

31 - Fertilisers

33 - Essential oils and resinoids; [...]

35 - Albuminoidal substances; modified starches; glues; enzymes

38 - Miscellaneous chemical products

40 - Rubber and articles thereof

41 - Raw hides and skins (other than furskins) and leather.

43 - Furskins and artificial fur; manufactures thereof.

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<sup>21</sup> WCO (2012).

- 44 - Wood and articles of wood; wood charcoal
- 47 - Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard
- 48 - Paper and paperboard; articles of paper pulp, of paper or of paperboard
- 50 - Silk
- 51 - Wool, fine or coarse animal hair; horsehair yarn and woven fabric
- 52 - Cotton
- 53 - Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn
- 84 - Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
- 87 - Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof
- 94 - [...]; prefabricated buildings



## 3.7 CLASSIFICATIONS OF EXPENDITURE<sup>22</sup>

The COICOP and the COFOG are part of a group of four classifications of expenditure based on purpose which are closely linked to one other and were developed or revised within the context of the SNA 1993. The classifications are:

- COICOP  
(based on the Classification of Household Goods and Services, SNA 1968)
- COFOG  
(based on the Classification of the Functions of Government, 1980)
- COPNI: Classification of the Purposes of Non-Profit Institutions Serving Households  
(based on the Classification of the Purposes of Private Non-Profit Bodies Serving Households, SNA 1968)
- COPP: Classification of the Outlays of Producers According to Purpose  
(based on the Classification of Outlays of Industries by Purpose, 1975)

COPNI and COPP are not discussed in these Guidelines, because they do not include categories that are directly related to agricultural statistics.

### 3.7.1 Classification of Individual Consumption According to Purpose – COICOP<sup>23</sup>

#### Identifier

COICOP

#### What:

- COICOP is an international classification of individual consumption according to purpose.
- It **classifies transactions undertaken by households, non-profit institutions serving households (NPISHs) and governments that result in payables** i.e. money paid or due for the acquisition of current and capital goods or of labour and other services, for the acquisition of financial assets or for the extinction of financial liabilities.
- The unit employed is the expenditure for the acquisition of consumption goods or services.
- COICOP follows the concepts and definitions set out in the SNA 1993.
- Although not strictly linked to any particular model of consumer behaviour, the classification is designed to broadly reflect differences in income elasticity; for example, low-income households spend relatively high proportions of their budgets on food, clothing and housing, while richer households spend more on transport, education, health and recreation.
- A CPC correspondence table is available.

#### When and who

- COICOP was originally included in the SNA 1993.
- It was improved upon by the OECD in cooperation with the UNSD and Eurostat.
- It was approved by the UNSC at its Thirteenth Session in 1999.
- Currently, its custodian is the UNSD.

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<sup>22</sup> The terms “purpose” and “function” are used interchangeably in the 1993 SNA to indicate socio-economic objectives that institutional units aim to achieve through various kinds of outlays (UNSD, 2000).

<sup>23</sup> UNSD (n.d.-b).

## Versions

- Version currently in use: 1999 version, included in the SNA 2008
- Previous versions: SNA 1993
- Next version: to be determined by the UN EG

## Purpose and applications

- COICOP classifies transactions undertaken by households, non-profit institutions serving households (NPISHs) and governments that result in payables
- Price statistics
- Statistics on purchasing power parities
- Household statistics and household budget surveys
- Compilation of national accounts

## Structure

- COICOP adopts a three-level structure<sup>24</sup>:

XX	Division
XX.X	Group
XX.X.X	Class

- Classes are divided into:
  - services (S)
  - non-durables (ND)
  - semi-durables (SD) and
  - durables (D)

Note: The distinction is based on whether the good in question can be used only once, or repeatedly or continuously over a period considerably exceeding one year. Food, beverages, tobacco and narcotics are all non-durable goods. This supplementary classification enables other analytic applications. For example, it may be useful to estimate the stock of capital goods held by households; goods within COICOP classes identified as durables provide the basic elements for these estimates.

## Sections on agriculture

- These include expenses for individual consumption of food, forest products (energy), pesticides, fertilizers and agricultural machinery. The sections are as follows:

Groups:

01.1 - Food

01.2 - Non-alcoholic beverages

02.1 - Alcoholic beverages

02.2 - Tobacco

02.3 - Narcotics

04.5 - Electricity, gas and other fuels

05.5 - Tools and equipment for house and garden

05.6 - Goods and services for routine household maintenance

09.3 - Other recreational items and equipment, gardens and pets

---

<sup>24</sup> An additional level will most likely be developed in the future.

### 3.7.2 Classification of the Function of Government – COFOG<sup>25</sup>

#### Identifier

COFOG

#### What

- COFOG classifies *transactions* by general government, according to the function
- The *transactions* it considers include: outlays (expenses + transactions in non-financial assets) on final consumption expenditure, intermediate consumption, gross capital formation, and capital and current transfers
- It distinguishes between individual and collective expenditures for services provided by general government and shows government expenditure as follows:
  - consumption expenditure that benefits *individual* households: housing, health, recreation and culture, education, social protection. These contribute to the households' actual final consumption.
  - *collective* consumption expenditure: general public services, defence, public order and safety, economic affairs (including agriculture, forestry, fishing and hunting) and environmental protection. These constitute the governments' actual final consumption.
- In principle, the COFOG classification units are individual transactions. This principle should apply with regard to capital and current transfers and the net acquisition of financial assets.
- For most of the other outlays, it is often not possible to use transactions as units of classification; COFOG codes are therefore assigned to units within government departments or ministries (all outlays by a particular unit will then be given the COFOG code assigned to that unit).
- If the smallest bodies that can be identified in the government accounts performs more than one COFOG function, it may be possible to:
  - apportion outlays of multifunction bodies among COFOG functions by reference to the proportion of work-months devoted to the different functions *or*
  - (more often) assign all outlays by multifunction units to whichever purpose appears to account for the largest part of total outlays.

#### When and who

- COFOG was developed by the OECD in cooperation with the UNSD and Eurostat.
- It was approved at the UNSC's Thirteenth Session in 1999.
- Its current custodian is the UNSD.

#### Versions

- Version currently in use: 2000 (published after the SNA 1993 with additional information, although the structure is the same)
- Previous version: 1970
- Next version: not planned yet

#### Purpose and applications

- COFOG classifies transactions undertaken by government for individual and collective services.
- It enables the examination of trends in government outlays on particular functions or purposes over time.
- COFOG may be used in:
  - Compiling national accounts
  - Public finance, government budget
  - Public expenditures surveys and databases
  - Official Development Assistance (ODA) statistics
  - Public sources for investments and subsidies in agriculture

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<sup>25</sup> UNSD (n.d.-a).

## Structure

- COFOG follows a three-level structure:

XX	Division
XX.X	Group
XX.X.X	Classes

- Classes are divided into:
  - Collective services (CS)
  - Individual services (IS)

## Sections on agriculture

- The sections on agriculture include transactions by government for agriculture, fishery/aquaculture, forestry and fertilizers. In particular, they are the following:

Classes:

04.2.1 - Agriculture (CS)

04.2.2 - Forestry (CS)

04.2.3 - Fishing and hunting (CS)

04.4.1 - Mining of mineral resources other than mineral fuels (CS) (fertilizer minerals)

04.8.2 - R&D Agriculture, forestry, fishing and hunting (CS)

## 3.8 INTERNATIONAL STANDARD CLASSIFICATION OF OCCUPATIONS – ISCO<sup>26</sup>

### Identifier and current version

ISCO-08

### What

- ISCO provides a system for organizing occupational information into a clearly defined set of groups according to **the tasks and duties** undertaken in each job.
- It is designed around **two key concepts**: the concept of the job and that of the skills required for competent performance of the job:
  - ‘*job*’ is defined as a set of tasks or duties performed, or meant to be performed, by one person
  - ‘*occupation*’ refers to the kind of work performed in a job; an occupation is defined as a set of jobs whose tasks are characterized by a high degree of similarity
  - ‘*skill*’ is defined as the ability to carry out the tasks and duties of a particular job. Two dimensions of skills are used to arrange occupations into groups:
    - the *skill level*, defined as a function of the complexity and range of the tasks and duties to be performed in an occupation, and
    - the *skill specialization*, measured in terms of the field of knowledge required, the tools and machinery used, the material worked on or with and the kinds of goods and services produced.

### When and who

- The ISCO’s custodian is the ILO.
- The first version of the ISCO was adopted in 1957, by the Ninth International Conference of Labour Statisticians (ICLS).

### Versions

- Version currently in use: 2008 (ILO, 2012)
- Previous versions: 1958, 1968, 1988
- Next version: options for review to be considered at the Twentieth ICLS in 2018 (ILO, 2013a)

### Purpose and applications:

- ISCO facilitates the international comparison of occupational information, including statistics.
- It provides a conceptual framework and model for the development or revision of national occupational classifications.
- It may be used directly in national applications, when countries are unable to develop national occupation classifications.
- ISCO may be applied in various domains, including statistical, administrative and client-oriented activities such as:
  - household surveys
  - labour force and employer surveys
  - prices statistics (e.g. labour cost index)
  - population censuses
  - compilation of statistics derived from administrative and client-oriented activities
  - matching jobseekers with job vacancies
  - management of work-related migration
  - planning of vocational education and training

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<sup>26</sup> ILO (2010).

## Structure

- ISCO follows a four-level structure. Each level is associated with a numerical code:

X	Major groups
XX	Sub-major groups
XXX	Minor groups
XXXX	Unit groups

## Sections on agriculture

- These include occupations in agriculture, fishery/aquaculture and forestry and are as follows:

Units:

1311	Agricultural and forestry production managers
1312	Aquaculture and fisheries production managers
3142	Agricultural technicians
3143	Forestry technicians
6111	Field crop and vegetable growers
6112	Tree and shrub crop growers
6113	Gardeners, horticultural and nursery growers
6114	Mixed crop growers
6121	Livestock and dairy producers
6122	Poultry producers
6123	Apiarists and sericulturists
6129	Animal producers not elsewhere classified
6130	Mixed crop and animal producers
6210	Forestry and related workers
6221	Aquaculture workers
6222	Inland and coastal waters fishery workers
6223	Deep-sea fishery workers
6224	Hunters and trappers
6310	Subsistence crop farmers
6320	Subsistence livestock farmers
6330	Subsistence mixed crop and livestock farmers
6340	Subsistence fishers, hunters, trappers and gatherers
7233	Agricultural and industrial machinery mechanics and repairers
8341	Mobile farm and forestry plant operators
9211	Crop farm labourers
9212	Livestock farm labourers
9213	Mixed crop and livestock farm labourers
9214	Garden and horticultural labourers
9215	Forestry labourers

## 3.9 INTERNATIONAL CLASSIFICATION BY STATUS IN EMPLOYMENT – ICSE<sup>27</sup>

### Identifier and current version

ICSE-1993

### What

- o ISCE classifies jobs with respect to the type of explicit or implicit *contract of employment* between the job holder and the economic unit in which he or she is employed, based on:
  - the type of economic risk (to which the job holder is exposed), an element of which is the strength of attachment between the person and the job, and
  - the type of authority over establishments and other workers which the job incumbents have or will have.
- It is *composed of six substantive categories of employment* (employees, employers, own-account workers, members of producers' cooperatives, contributing family workers, workers not classifiable by status).
- Additional optional groups may be used to provide further information and to adequately monitor changes in employment arrangements, as needed in the country.
- ISCE provides a model for the development of national classifications for statistics on status in employment, and constitutes the basis for the production of internationally comparable statistics on the topic.

### When and who

- ISCE was first approved by the UNSC in 1958 (ICSE-1958).
- It was adopted through a resolution of the Fifteenth ICLS in January 1993 (ICSE-1993).

### Versions

- Version currently in use: 1993<sup>28</sup>
- Previous versions: 1958
- Next version: a revision is currently underway, with the expectation of submitting a draft replacement for adoption at the Twentieth ICLS in 2018 (ILO, 2013b).

### Purpose and applications

- ISCE constitutes the basis for the production of internationally comparable statistics on employment relationships, including the distinction between salaried employment and self-employment.
- It provides a model for the development of national classifications for statistics on status in employment.
- It may be applied in several domains, including:
  - Employment statistics
  - Economic and social analysis
  - Economic and labour market policies
  - Statistics on the socioeconomic status of persons and households
  - Labour force and employment surveys
  - Censuses of population and agriculture
  - Inputs for the compilation of national accounts
  - Household surveys.

### Sections on agriculture

- All are relevant; however, there are no sector-specific categories.

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<sup>27</sup> ILO (n.d.).

<sup>28</sup> ILO Resolution Concerning the International Classification of Status in Employment. International Conference of Labour Statisticians/15 Session, January 1993.

## Structure

- The ISCE adopts a flat structure which comprises six categories: employees, employers, own-account workers, members of producers' cooperatives, contributing family workers, workers not classifiable by status.
- In particular, the ICSE structure (complete) is as follows:

code	descriptor
1	Employees; among whom countries may need and be able to distinguish "employees with stable contracts" (including "regular employees")
2	Employers
3	Own-account workers
4	Members of producers' cooperatives
5	Contributing family workers
6	Workers not classifiable by status



## 3.10 INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION – ISCED<sup>29</sup>

### Identifier and current version

ISCED 2011; ISCED-F 2013

### What

- ISCED is the reference classification for organizing education programmes and related qualifications by education levels and fields.
- It serves as a framework to classify educational activities as defined in programmes and the resulting qualifications into internationally agreed categories.
- ISCED classifies education programmes by content, using two main cross-classification variables: *levels* and *fields* of education.
- ISCED 2011 focused primarily on changes to the levels of *education programmes (ISCED-P)* and introduced, for the first time, a classification of *levels of educational attainment based on qualifications (ISCED-A)*.
- During the review process for the 2011 revision, it was decided that the *fields of education* should be examined in a separate process. An independent but related classification was established and can be updated with a different frequency compared to ISCED-P and ISCED-A: the *ISCED Fields of Education and Training (ISCED-F)*, which remains part of the same family of classifications.
- The basic units of classification are the national (and sub-national) education programme and the related educational qualification recognized. An *education programme* is defined as a coherent set or sequence of educational activities or communication designed and organized to achieve predetermined learning objectives, or accomplish a specific set of educational tasks over a sustained period.

### When and who

- ISCED was first developed in the mid-1970s by UNESCO.
- It is a product of international agreement and was formally adopted by the General Conference of UNESCO Member States.
- The UNESCO Institute for Statistics (UIS) is the custodian of ISCED and is thus responsible for the development, maintenance, updating and revision of this reference classification. The UIS provides guidance on the effective and consistent use of ISCED for data collection and analysis, and maintains links with custodians of other relevant classifications to ensure consistency across related standard frameworks.

### Versions

- Version currently in use: ISCED 2011 and ISCED-F 2013
- Previous versions: 1970, 1997
- Next version: not planned

### Purpose and applications

- compilation and presentation of:
  - education statistics, both nationally and internationally
  - statistics on participants, entrants, graduates and educational attainment
  - administrative registers
  - individual and household surveys
  - population censuses

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<sup>29</sup> UNESCO Institute for Statistics (n.d.), (2012) and (2014).

## Structure

- The ISCED classification consists of parallel coding schemes for education programmes (ISCED-P) and levels of educational attainment (ISCED-A) (UNESCO Institute for Statistics, 2012 and 2014).
- Three-digit coding systems are used to codify both education programmes and educational attainment (if users of ISCED identify additional combinations of categories and sub-categories, the list of three-digit codes can be expanded using the existing codes reserved for additional dimensions).
- ISCED-F also adopts a three-level structure.

	Code	Descriptor
<b>ISCED P and ISCED A</b>	X	First digit – level one
	XX	Second digit – level two
	XXX	Third digit – level three
<b>ISCED F</b>	XX	First level
	XXX	Second level
	XXXX	Third level

## Sections on agriculture

- All categories can be linked to agriculture, although ISCED-P and -A do not include sector-specific categories.
- ISCED-F includes fields of education and training on agriculture, fishery/aquaculture and forestry:

Category (ISCED-F):

08 - Agriculture, forestry, fisheries and veterinary

### 3.11 LAND CLASSIFICATIONS IN THE UN SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING (SEEA) 2012<sup>30</sup>

Land is central to economic and environmental accounts; in the context of the SEEA Central Framework, it is defined as “*a unique environmental asset that delineates the space in which economic activities and environmental processes take place and within which environmental assets and economic assets are located*”.

In the SEEA, the term “land” applies to both terrestrial areas and areas covered by water.

Although closely connected, land use and land cover in the SEEA fall under separate classifications. This enables concepts to be consistently and unambiguously defined.

#### 3.11.1 Land use classification<sup>31</sup>

##### Identifier

N/a

##### What

- Land use reflects:
  - the *activities* undertaken on land, *and*
  - the *institutional arrangements* put in place for a given area, for the purpose of (a) *economic production* or (b) the *maintenance and restoration* of environmental functions.
- The term “*use*” implies the existence of some human intervention or management; however, to enable a complete accounting for land use within a country, both land use and land not in use are included.
- In the SEEA, land use includes areas of land and inland water, sometimes extended to the country’s exclusive economic zone (EEZ).

##### When and who

- The land use classification was published by the UNSD in SEEA 2012.
- Its development required approximately four years (2008-2012) and was led by FAO (in particular, the Statistics Division, the Fisheries and Aquaculture Department and the Forestry Department) in consultation with countries participating in the SEEA global consultation, the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEAA), the London Group on Environmental Accounting, and the SEEA editorial board.

##### Versions

- Version currently in use: 2012 version included in the SEEA Central Framework
- Previous versions: none
- Next version: not planned, although possible improvements are being discussed

##### Purpose and applications

Land use classification may be applied to:

- environmental statistics
- environmental and economic accounting
- agricultural statistics
- land use surveys

<sup>30</sup> UN, EU, FAO, IMF, OECD & WB (2012).

<sup>31</sup> UN et al. (2012). See especially p. 320.

- constructing area sampling frame for agricultural statistics
- compiling **land accounts**:
  - the “*land use x land use*” matrix illustrates changes in the types of land use and the flows within their categories over a specific period of time
  - the “*land use x land cover*” matrix enables accounting for activities carried out by type of land.

### Structure

- The land use classification adopts a four-digit hierarchical structure:

X	One-digit level
X.X	Two-digit level
X.X.X	Three-digit level
X.X.X.X	Four-digit level

### Sections on agriculture

- Land use classification includes categories on land used for agriculture, forestry and aquaculture. For fishery and aquaculture, it also includes categories on inland waters, coastal waters and the Economic Exclusive Zone. The sections are:

Classes:

- 1.1 Agriculture
- 1.2 Forestry
- 1.3 Land used for aquaculture
- 2.1 Inland waters used for aquaculture or holding facilities
- 2.2 Inland waters used for maintenance and restoration of environmental functions
- 2.3 Other uses of inland waters n.e.c.
- 2.4 Inland waters not in use

*The classes below are for extended analysis of coastal waters and EEZ areas (may be used if extended analysis is required):*

- 3.1 Coastal waters used for aquaculture or holding facilities
- 3.2 Coastal waters used for maintenance and restoration of environmental functions
- 3.3 Other uses of coastal waters n.e.c.
- 3.3 Coastal waters not in use
- 4.1 EEZ areas used for aquaculture or holding facilities
- 4.2 EEZ areas used for maintenance and restoration of environmental functions
- 4.3 EEZ areas of coastal waters n.e.c.
- 4.4 EEZ areas not in use

### 3.11.2 Land cover classification<sup>32</sup>

#### Identifier

N/a

#### What

- Land cover refers to the *physical* and *biological cover* of the Earth’s surface, including vegetation and abiotic surfaces.

<sup>32</sup> UN et al. (2012), especially p. 330.

- Land cover only includes areas of land and inland water, and – unlike land use – excludes coastal waters.
- Current land cover is a function of natural changes in the environment and of previous and current land use.
- In the SEEA, the land cover classification was generated using the FAO Land Cover Classification System (LCCS) (Di Gregorio & Jansen, 2005), a system that enables the systematic recording of the biophysical characteristics of all areas of land within a given territory (LCCS is not a statistical classification, but rather a system used for cartography and mapping).
- A comprehensive, mutually exclusive and unambiguous set of 14 classes of land cover types have been developed and defined based on LCCS, together with a set of rules to facilitate the application of concepts.
- The classification can be used at all scales; this means that it can be applied at any level of observation of the territory, from large to small areas.

### When and who

- Both classifications were published by the UNSD in SEEA 2012.
- Its development required approximately four years (from 2008 to 2012) and was led by FAO (in particular, the Statistics Division and the Deputy Director-General Natural Resources ) in consultation with countries participating in the SEEA global consultation, the UNCEEA, the London Group on Environmental Accounting, and the SEEA editorial board.

### Versions

- Version currently in use: 2012 version included in the SEEA Central Framework
- Previous versions: none
- Next version: not planned, although possible improvements are under discussion

### Purpose and applications

Land cover classification may be used for:

- environmental statistics
- environmental and economic accounting
- agricultural statistics
- translation of maps into statistics (LCC)
- construction of area sampling frames for agricultural statistics
- compilation of land accounts:
  - the “*land cover x land cover*” matrix shows the changes in types of land cover and the flows within their categories over a specific period of time
  - “*land use x land cover*” matrix enables accounting for activities carried out by type of land cover

### Structure

- The LCC follows a flat (one-digit) structure.

### Sections on agriculture

- The LCC includes land covered by crops, trees, mangroves and shrubs (also aquatic or regularly flooded), inland and coastal waters. The classes are as follows (Class 1 refers to artificial surfaces):

Classes:

- 2 - Herbaceous crops
- 3 - Woody crops
- 4 - Multiple or layered crops
- 5 - Grassland
- 6 - Tree-covered areas
- 7 - Mangroves
- 8 - Shrub-covered areas

- 9 - Shrubs and/or herbaceous vegetation, aquatic or regularly flooded
- 13 - Inland water bodies
- 14 - Coastal water bodies and intertidal areas

## 3.12 FAO CLASSIFICATIONS FOR THE WORLD PROGRAMME FOR THE CENSUS OF AGRICULTURE<sup>33</sup>

In FAO's WCA, a system of classifications is provided to help countries conduct agricultural censuses. While maintaining specificities for censuses, these classifications, together with other concepts included in the WCA, are periodically reviewed and updated to maintain alignment with major international standards such as the CPC, ISIC and HS standards, allow linkage to other data sources (such as the population censuses and surveys), and finally enable the integration of statistics from agricultural censuses into the national statistical system.

Every ten years, the WCA produces methodological guidelines that include classifications on crops, livestock, machinery and land use. The current version is the WCA 2020.

While FAO uses the classifications' standard structure to compile census data from countries all over the world and thus enable comparability, countries may further expand or customize the classification based on their specific needs.

The common statistical unit is the agricultural holding.

### The WCA 2020 classification of crops<sup>34</sup>

#### Identifier

ICC

#### What

- The WCA's classification of crops is the Indicative Crop Classification (ICC ver.1.1 in WCA 2020).
- The ICC reflects crops' *growing cycle* (temporary or permanent) and *species*.
- Its structure takes into account the major crops at international level; however countries may also adapt its structure by adding local crops or reducing detail-based national needs.
- The ICC version.1.1 was updated in alignment with CPC Ver.2.1.
- The key difference between product and crop classifications is that the ICC refers to crops that are grown in agricultural holdings (i.e. to the plants), while the CPC refers to the products generated from the crops; for example, "mustard"(ICC, subclass 4.03.03) is an oilseed crop, whereas "mustard seed"(CPC, subclass 01442) is the oilseed product.
- In ICC, a given crop is classified only once in the classification, regardless of how the crop is used; for example, maize is assigned to Group 1, "Cereals", without distinguishing whether the maize is used for flour or for oil, or other uses.
- If a country wishes to identify the different uses of a crop (e.g. food or other uses) it has two options:
  - (a) further subdivide the crop in the crop classification according to end use;
  - (b) include an additional item in the agricultural census on the crop's end-use.
- To help countries use ICC, an alphabetical list of crops with botanical names and crop codes is also provided.

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<sup>33</sup> FAO (2015d).

<sup>34</sup> FAO (2015d), Annex 4.

## BOX 15

### Three main features to consider when classifying crops with ICC

**Product type** – on the basis of the CPC's structure, crops are first divided into groups (e.g. cereals and vegetables); each group is then further subdivided by crop type (e.g. leafy/stem vegetables or fruit-bearing vegetables).

**Genus or species** – at the lowest level of the classification, each crop is described by its botanical name; however, the ICC is not a botanical classification and the groupings are based more on the crops' agricultural use than on their botanical similarities.

**Temporary or permanent crops** – while this distinction is irrelevant to product classification, it is fundamental to crop classification.

### The WCA 2020 classification of livestock<sup>35</sup>

#### What

- The number of livestock is a fundamental item in an agricultural census, and is especially useful as a means to provide sampling frames for livestock surveys.
- The WCA classification of livestock covers all *livestock of any type being raised on the holding*; livestock refers to all animals, birds and insects kept or reared in captivity mainly for agricultural purposes (domestic animals such as cats and dogs are excluded, unless they are being raised for food or other agricultural purposes).
- The animals raised include those present on the holding, as well as those being grazed on communal grazing land or in transit at the time of enumeration; bees are counted in terms of number of hives.
- A holding raises an animal if it has primary responsibility for looking after the animal on a long-term basis and making day-to-day decisions about its use, *regardless of ownership*.
- If countries wish to subdivide a livestock type by breed or raising method, they may expand the classification accordingly.
- The classification of livestock in WCA 2020 is highly harmonized with CPC Ver.2.1.

### The WCA classification of machinery and equipment<sup>36</sup>

#### What

- The WCA classification of machinery identifies three main groups of machinery and equipment (manually operated, animal-powered and machine-powered) *used* on the holding, wholly or partly for agricultural production (machinery and equipment used exclusively for purposes other than agricultural production are excluded, as well as those owned by the holder but not used).
- A *broad concept* of machinery and equipment is used for the agricultural census, covering all machinery, equipment and implements used as inputs to agricultural production (including everything from simple hand tools, such as a hoe, to complex machinery such as a combine harvester).

### The WCA 2020 classification of land use<sup>37</sup>

#### What

- Land use classes recommended by WCA 2020 are harmonized with the SEEA land use classification. According to SEEA, land use reflects both: (i) the activities undertaken and (ii) the institutional arrangements put in place for a given area for the purposes of economic production or the maintenance and restoration of environmental functions. For the purposes of agricultural censuses, the WCA recommends *nine basic land use classes*.

<sup>35</sup> FAO (2015d), Annex 6.

<sup>36</sup> FAO (2015d), Annex 7.

<sup>37</sup> FAO (2015d), Sections 8.2.7-8.2.35 and Annex 8.



- If a country prefers to use its own land use classification, the WCA recommends that the land use classes adopted at national level also be aggregable up to the nine WCA basic land use types, to enable international *comparison*.
- Land use data are often collected at the *parcel level*. However, a parcel may have more than one land use. Sometimes, there is a mixture of land uses in a parcel or field that cannot be subdivided. In such cases, land use should be determined on the basis of its *main use*. Main use is normally defined on the basis of the value of production from each activity.
- Data on the area of a holding must refer to a point in time, i.e. to the census reference day. In determining land use, reference must be made to the activities carried out during the census reference year, i.e. a twelve-month reference period, usually either a calendar year or an agricultural year. If the land use during the year has changed, the land should be assigned to the *present use*.

### When and who

- Since the 1950s, the FAO Statistics Division has published the methodology for the WCA every ten years.
- The methodological guidelines include concepts, definitions and classifications on crops, livestock, machinery

### Versions

- Version in use: WCA 2020 (it is released in November 2015 but will enter into force in 2016)
- Previous version: WCA 1960, WCA 1980, WCA 1990, WCA 2000, WCA 2010
- Next version: planned in 2025

### Purpose and applications

The WCA classifications may be used in:

- agricultural statistics and
- agricultural censuses.

### Sections on agriculture

- All sections are relevant.

### Structure

#### WCA classification of crops

- The WCA classification of crops 164 categories of crops, grouped into nine groups.
- It follows a four-level structure:

X	Group
X.XX	Class
X.XX.XX	Sub-class
X.XX.XX.XX	Order

#### WCA classification of livestock

- The WCA classification of livestock features 26 categories of animals grouped into eight main categories.
- It adopts a two-level structure:

X	Group
XX	Class

### **WCA classification of machinery and equipment**

- The WCA classification of machinery envisages 72 types of machinery listed into three main groups, subdivided into five classes and four sub-classes.
- It follows a three-level structure (group, class, sub-class):

X	Group
XX	Class
XXX	Sub-class

### **WCA classification of land use**

- The WCA classification of land use contains nine basic land use classes, LU1 to LU9 (land under temporary crops, land under temporary meadows and pastures, land temporarily fallow, land under permanent crops, land under permanent meadows and pastures, land under farm buildings and farmyards, forest and other wooded land, area used for aquaculture, other area not elsewhere classified).
- Six of the basic land use classes can be grouped into four aggregate classes: arable land (LU1-3), cropland (LU1-4), agricultural land (LU1-5), land used for agriculture (LU1-6).

LU 1-9	Basic land use classes
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### 3.13 FAO CLASSIFICATIONS FOR FISHERIES AND AQUACULTURE STATISTICS

The FAO Statistics and Information Branch of the Fisheries and Aquaculture Department (FIPS) collates and disseminates fishery data, structured in various data collections (capture and aquaculture production, fisheries commodities production and trade, fishers and fish farmers, fishing vessels, apparent fish consumption).

The structure of the classifications used by FIPS to collate its fishery data collections was agreed with the Coordinating Working Party on Fisheries Statistics (CWP<sup>38</sup>), of which FAO FIPS is the Secretariat.

The CWP has been operational since 1960, under Article VI-2 of FAO's Basic Text. The CWP provides a mechanism for the coordination of the fishery statistical programs of regional fishery bodies and of other intergovernmental organizations whose remit relates to fishery statistics. One of the CWP's main objectives is setting standard concepts, definitions, classifications and methodologies for the collection and collation of fishery statistics. The CWP Handbook of Fishery Statistical Standards (FAO, n.d.-c) includes comprehensive definitions of concepts and details of standard classifications.

#### What

##### **The List of Species for Fishery Statistics Purposes (identifier: ASFIS)<sup>39</sup>**

- ASFIS is a list of species that includes 12,560 species items (2014 version), selected on the basis of their interest or relation to fisheries and aquaculture.
- For each species item stored in a record, the following descriptors are available:
  - *3-alpha code*
    - This is a code developed by the CWP for tabulations, questionnaires and publications in which the lack of space may impede the use of adequate descriptors in all the languages required
    - It is assigned to a species item permanently (it is, thus, a permanent reference to that species item)
    - The 3-alpha code is issued only for species of commercial significance
    - FAO is the depository agency for the 3-alpha codes: requests for information and for the allocation of a 3-alpha code to new species should be addressed to FAO.
  - *ISSCAAP code*
    - the International Standard Statistical Classification for Aquatic Animals and Plants (ISSCAAP)<sup>40</sup> classifies aquatic commercial species into 50 groups and nine divisions on the basis of their taxonomic, ecological and economic characteristics
    - currently, all species in the ASFIS List are classified by ISSCAAP group, with the exception of marine birds and snakes
  - *taxonomic code*
    - the taxonomic code consists of five levels of aggregation (Main groupings, Orders, Families, Genera and Species)
    - taxonomic information (scientific name, author(s), family, and higher taxonomic classification)
- Approximately 75 per cent of the records have an English name, 40 per cent a French name and 36 per cent a Spanish name; Arabic, Chinese, Russian names are also available for a limited number of records.
- Official FAO names apply only to species items for which production statistics exist.

##### **The FAO Major Fishing Areas for Statistical Purposes<sup>41</sup>**

- The FAO Major Fishing Areas for Statistical Purposes are arbitrary areas the boundaries of which were determined in consultation with international fishery agencies on the basis of various considerations, including:

38 FAO (n.d.-a).

39 FAO (2015c).

40 FAO (n.d.-k).

41 FAO (n.d.-j). The webpage does not reflect the recent change to the classification's name. The change from "Major fishing areas" to "Major areas" was agreed at the CWP's Twenty-fourth session to include aquaculture production and serve other statistical purposes.

- the boundary of natural regions and the natural divisions of oceans and seas
- the boundaries of adjacent statistical fisheries bodies that had already been established in intergovernmental conventions and treaties
- existing national practices
- national boundaries
- the longitude and latitude grid system
- the distribution of the aquatic fauna
- the distribution of resources and the environmental conditions within an area
- For statistical purposes, 26<sup>42</sup> major areas currently exist. These comprise:
  - seven major inland areas covering the inland waters of the continents and
  - 19 major marine areas covering the waters of the Atlantic, Indian, Pacific and Southern Oceans, with their adjacent seas.
- Some FAO major marine areas are further divided into subareas, divisions and subdivisions, according to the needs of the regional fishery management bodies responsible for managing the fisheries and fishery resources of the individual FAO Major Areas; these systems of subareas, divisions and subdivisions have been successfully developed and implemented by relevant regional fishery bodies; any modifications are duly reported to CWP.

#### **The International Standard Statistical Classification of Fishing Gear (identifier: ISSCFG)<sup>43</sup>**

- The ISSCFG was developed and adopted by the CWP in close collaboration with the International Council for the Exploration of the Sea (ICES).
- It covers a general categorization of fishing gears and fishing methodologies based on the mechanism used to entangle aquatic species for harvesting.

#### **The International Standard Statistical Classification of Fishery Vessels (identifier: ISSCFV)**

- Under the ISSCFV, the CWP adopted three classifications (FAO, n.d.-g):
  - the International Standard Statistical Classification of Fishery Vessels by Gross Register Tonnage (GRT) Categories, based on the Gross Register Tonnage of the vessels; this was approved by the CWP in 1977
  - the International Standard Statistical Classification of Fishery Vessels by Vessel Types, based on the type of gear used by the vessels; approved by the CWP in 1984
  - the International Standard Statistical Classification of Vessels by Length Classes, approved by CWP in 1982; fleet data are also collected according to length.
- Until 1995, FAO fleet data on vessel tonnage were measured in accordance with the Convention for a Uniform System of Tonnage Measurement of Ships (Oslo, 1947), and were thus expressed by GRT; since 1996, they have been measured according to the International Convention on Tonnage Measurement of Ships (London, 1969), and thus expressed in Gross Tonnage (GT).

#### **The International Standard Statistical Classification of Fishery Commodities (identifier: ISSCFC)<sup>44</sup>**

- The International Standard Statistical Classification of Fishery Commodities is an international fishery commodity classification.
- It covers products derived from fish, crustaceans, molluscs and other aquatic animals, plants and residues.
- Commodities are classified according to the species and to the degree of processing undergone.
- Maintenance of the classification includes regular updating in light of new emerging commodities or species in international trade and of changes in international or national commodity classifications.

<sup>42</sup> Originally, there were 27 fishing areas. One of these (07: "Former USSR area – Inland waters") was used only up to the 1988 statistics.

<sup>43</sup> FAO (n.d.-i).

<sup>44</sup> FAO (n.d.-f).

### When and who

- All fisheries classifications mentioned above were developed from 1960 to date, by FAO's Fisheries and Aquaculture Department in consultation with the CWP.
- As regards ASFIS and the ISSCFC, FAO is the depository agency for classification and updating.

### Versions

#### ISSCAAP

- Version currently in use: 2001
- Previous version: multiple versions up to the year 2000
- Next version: there are no immediate plans for revision

#### ASFIS

- Version currently in use: 2014
- Previous version: 2013
- Next version: 2015

#### FAO Major Areas for Statistical purposes

- Version currently in use: 2003
- Previous version: 2001
- Next version: no immediate plans for revision

#### ISSCFG

- Version currently in use: version endorsed by CWP in 2013<sup>45</sup>
- Previous version: 1980<sup>46</sup>
- Next version: no immediate plans for revision

#### ISSCFV

- Version currently in use: 1984
- Previous version: 1977
- Next version: no immediate plans for revision

#### ISSCFC

- Version currently in use: 2014
- Previous version: 2013
- Next version: 2015

### Purpose and applications

The classifications seen above have the following applications:

- Collection and dissemination of fisheries statistics by FAO, regional fishery bodies and other intergovernmental organizations
- Use by countries when reporting and exchanging information (e.g. High Seas Vessels Authorization Record (HSVAR), Highly Migratory Species (HMS), Port State measures) based on international legal instruments<sup>47</sup>
- ISSCAAP, ASFIS, FAO Major Areas for Statistical Purposes: for compiling capture and aquaculture production statistics

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<sup>45</sup> The new version is not yet available in the CWP Handbook.

<sup>46</sup> FAO (n.d.-h).

<sup>47</sup> These include the 1995 United Nations Agreement for the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; the FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas; the 2009 FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing

- when establishing new regional fishery bodies, FAO Major Areas often becomes a basis to determine the scope of their jurisdiction
- ISSCFG may be used for fishing gears or fishing effort
- As for ISSCFG, this classification was initially designed to improve the compilation of harmonized catch and effort data through questionnaires and fish stock assessment exercises. However, it has also proven to be very useful for fisheries technology and training fishermen. In particular, it has been used as a reference in works dealing with the theory and construction of gear and for preparing specialized catalogues on artisanal and industrial fishing methods.
- ISSCFV is used for fleet statistics.
- The ISSCFV for vessel type was initially designed to promote the harmonized compilation of fleet statistics, and was defined strictly on the basis of the shape and structure of vessels. However, there is substantial confusion in using this classification, partly due to difficulties in distinguishing vessel structure from the fishing methods or gear used by these vessels, and partly because the multipurpose nature of vessel structures has increased. In principle, the use of the ISSCFG is recommended to describe fishing methods.
- The ISSCFC is used for the production and trade of fishery commodities.

## Structure

### ISSCAAP

- The ISSCAAP comprises 50 groups under nine divisions.
- It adopts a two-level, two-digit code structure:

X	Division
XX	Group

### ASFIS

- The ASFIS uses an alphanumeric code composed by the ISSCAAP code + taxonomic code + 3-alpha identifier.
  - The taxonomic code is a ten-digit numerical code having classificatory purposes; in a few special cases, three further digits were added.
  - As for the 3-alpha code, the three letters of the 3-alpha code are only sometimes related to the scientific or English name of the species items. In all other cases, the 3 letters are randomly assigned.

ISSCAAP code	Taxonomic code	3alfa code
XX	XXXXXXXXXX	AAA

### FAO Major Fishing Areas for Statistical purposes

- The FAO Major Fishing Areas for Statistical purposes consist of 27<sup>48</sup> major areas divided into two main groups: inland and marine.
- The FAO Major Areas adopt a two-digit code system.

Inland waters	
XX	Major area
Marine areas	
XX	Major areas

<sup>48</sup> Since 1988, FAO effectively uses 26 FAO Major Areas, because Fishing Area 07 ("Former USSR area – Inland waters") referred to the area that was formerly the USSR. Since 1988, FAO fisheries production statistics are shown separately for each new independent republic of the former USSR.

- As for the regional breakdown of FAO major marine fishing areas, the internationally accepted standard practice is to divide each of the major fishing areas as follows:
  - First – subareas
  - Second – divisions
  - Third – subdivisions

### ISSFCG

- The current version adopts a two-level structure (categories, gears).
- The ISSFCG comprises 11 main categories at two-digit codes, each of which are subdivided into gears, each assigned a three-digit code:

XX	Main category
XX.X	Gear

### ISSCFV

*by GRT Categories*

- These follow a two-level structure (divisions, groups) with lower and upper GRT limits
- 12 main divisions at two-digit code are envisaged, each of which are subdivided into groups identified by a three-digit code.

XX	Main division
XXX	Group

*by Vessel Types*

- This classification abides by a two-level structure.
- It comprises 17 groups at two-digit codes, each of which contains a range of vessel types at four-digit codes:

XX	Group
XX.X.X	Vessel type

*by Length Classes*

- This classification follows a two-level structure.
- It envisages 12 divisions at two-digit code, each of which is subdivided into groups distinguished by three-digit codes:

XX	Divisions
XXX	Groups

### ISSCFC

- This classification is based on the SITC's structure, with additional codes to include links to ISSCAAP and breakdown by additional species and product forms.
- It is a hierarchical classification, but the number of codes is not fixed.

SITC	ISSCFC
XXX	XXX.X.X.X.X (different length, up to 5 positions added to SITC code)

### 3.14 INTERNATIONAL CLASSIFICATION CATEGORIES RELEVANT TO AGRICULTURE, FISHERIES AND FORESTRY<sup>49</sup>

**TABLE 3.2**  
International classification categories relevant to agriculture, fisheries and forestry

	ISIC	CPC	SITC	HS	COICOP	COFOG	ISCO	ICSE	ISGED P, A	ISGED F	SEEA - LAND USE	SEEA - LAND COVER
Agriculture & manufacture of processed products	01; 10*-13	01-02; 21*-26; 39	00-02; 04-09; 11-12; 21-23; 26; 29; 41-43; 61-62	01*-02*; 04-16*; 17-24; 33; 35; 40-44; 50-53	01.1*-02.3	04.2.1; 04.8.2*	1311*; 3142; 6111-6114; 6121-6130; 6310-6340*; 8341*; 9211-9214	all, non-specific	all, non-specific	08	1.1	2-5
Fishery & aquaculture and manufacture of fishery products	03; 10*	04; 21*	03; 08*	01*-02*; 03; 05*; 12*; 13*; 15*; 16*; 21*; 23*	01.1*	04.2.3; 04.8.2*	1312; 6221-6224; 6340*	all, non-specific	all, non-specific	08	1.3; 2.1-4.4	6*; 7*; 9*; 13-14
Forestry & forest products	02; 16-17; 31	03; 31-33; 38	24-25; 63-64	44; 47-48; 94	04.5	04.2.2; 04.8.2*	1311*; 3143; 6210; 6340*; 8341*; 9215	all, non-specific	all, non-specific	08	1.2	6*; 7*; 8; 9*
Pesticides	20*	34*	59	29; 38	05.6*							
Fertilizers	20*	16; 34*	56	25; 28; 31	05.6*; 09.3	04.4.1						
Machinery	28	44	72	84; 87	05.5		7233					
Services	46; 56	61; 63; 86										

A note of caution: the categories indicated in the table should not be considered as exhaustive or standard groupings; additional or alternative categories can be selected.

<sup>49</sup> Only general-scope classifications are included in Table 3.2 above: the WCA classifications relate to agriculture, and the FAO fisheries and aquaculture classifications relate to the fisheries and aquaculture domains.



# 4

## Implementation of international classifications at country level

### 4.1 INTERNATIONAL, REGIONAL AND NATIONAL CLASSIFICATIONS

Depending on their level of applicability and whether the custodian is an international, regional or national organization, statistical classifications may be:

- **National** classifications (NCs) – country-specific schemes developed by national authorities that may be based on or comply with international or regional classifications (recommended), or be stand-alone tools independent of other schemes.
- **Regional** or supranational classifications (RCs) – these are implemented by supranational organizations<sup>50</sup> and applied by their member countries (in some cases, regional classifications are produced by national statistical agencies or authorities from multiple countries and then used at regional level, e.g. NAICS, ANZSIC and the Australian and New Zealand Standard Classification of Occupations – ANZSCO).
- **International** classifications (ICs) – these are developed and maintained by international organizations<sup>51</sup>; they are the result of an international consultation process and are applicable at global level. In particular:
  - ICs are mechanisms essential to the harmonization and coordination of data compilation; they form the basis for internationally comparable data and serve as a model for the development of national and regional schemes;
  - they enable the comparability of national data and indicators at global level, thus facilitating countries' inclusion in global statistical activities;
  - they may be used in their original state or can be adapted to national specificities, to improve their relevance and applicability;
  - with regard to countries in the process of developing their own national classification systems, efficiency gains are significant when it is decided to use an IC rather than developing an *ad hoc* scheme;
  - for countries using ICs as the basis for their national classifications, efficiency is achieved in the short run in terms of resource saving, and in the long run in terms of data comparability and integration of national statistics into the global framework.

To ensure data harmonization and comparability, international standards should be taken as reference in the development of national and supranational schemes, and adapted to individual countries' requirements and statistical needs (see the Annex).

<sup>50</sup> Examples of supranational organizations are EUROSTAT, AFRISTAT, and ECLAC.

<sup>51</sup> Such as the UN, FAO, WCO, ILO, UNESCO, etc.

**BOX 16****Remarks/Tips 6**

- International classifications are living tools that are continuously improved.
- To ensure their relevance and uptake, countries are encouraged to contribute to their maintenance, in cooperation with custodians.

## 4.2 HOW COUNTRIES CAN BENEFIT FROM INTERNATIONAL STATISTICAL CLASSIFICATIONS

The adoption of ICs presents several potential benefits:

### Resources are saved

- to implement an existing international standard is more convenient than developing a new one
- the resources that the country must expend for its maintenance are limited, as the review process is carried out at international level by the custodian organization in consultation with the countries themselves
- the reporting burden is reduced when countries report data at international level, as there is no need to convert the data into different formats

### Country data are integrated at global level

- ICs allow for the data of an individual country to be comparable at global level

### Statistics are improved at national level

- ICs ensure accuracy and relevance through standardized item names, titles, definitions, descriptions and data groups
- they are the result of international expert consultations, and are thus solid and based on sound methodologies
- when used at national level by several different institutions, they enable data comparability and exchange across different national institutions; this contributes to the integration and sustainability of agricultural statistics in national statistical systems

### Better statistics are ensured at global level

- ICs increase “communication” among datasets
- they harmonize official statistics at global level
- further, ICs ensure statistical comparability over time and across countries

As reported by the UNSD,

“[w]hen international reference standards are not employed, national statistical offices risk their data not being comparable with those of other countries and miss out an opportunity to see how their statistical indicators compare with overall world development. They forego the opportunity to promote their data, and subsequently their country, when their data cannot be published within internationally recognizable frameworks” (UNSD, n.d.-c).

### 4.3 HOW TO ADAPT INTERNATIONAL CLASSIFICATIONS TO INDIVIDUAL COUNTRY NEEDS

When using an IC at national level, it is not always possible to apply its original format and structure. Different solutions may be devised to take into account specific requirements and country needs.

When ICs are used in their original state, the highest degree of comparability is ensured. However, national adaptations may also be developed to meet user needs. Two recommended solutions are presented below (Cases 1 and 2). These enable the maintenance of good alignment with the IC while adapting its structure to meet the country’s specific requests.

**Case 1**

The IC’s high-level categories are maintained but further detail is added at the lower level for regional or national purposes: ICs and national classifications (NCs) or regional classifications (RCs) are fully comparable, but the NCs or RCs are more detailed. This is the preferred option, as it is fully compatible with international standards at the higher level and provides additional information at the lower one.

**Example 4.1:**

Customize the international classification, adding detail at the lower level in NCs or RCs

International classification (A)	National classification (B)
Item A <sub>1</sub>	Item B <sub>11</sub>
	Item B <sub>12</sub>
Item A <sub>2</sub>	Item B <sub>21</sub>
	Item B <sub>22</sub>
Item A <sub>3</sub>	Item A <sub>31</sub>
	Item A <sub>32</sub>
	Item A <sub>33</sub>
Item A <sub>4</sub>	Item B <sub>41</sub>
	Item B <sub>42</sub>

**Case 2**

The IC’s lower-level items are retained, but different aggregates in NCs or RCs are defined, as the sum or split of the international items. This still allows for a good degree of comparability, because the aggregates may be reconstructed as in the ICs, while items at the lower levels are linked on a one-to-one basis.

**Example 4.2:**

Customize the international classification by developing alternative aggregates in NCs or RCs, while items at the lower level are linked one-to-one

International classification (A)		National classification (B)	
Aggregate A <sub>1</sub>	Item A <sub>11</sub>	Alternative aggregate $B_1 = A_1 \cup A_2$	Item B <sub>11</sub>
	Item A <sub>14</sub>		Item B <sub>12</sub>
	Item A <sub>13</sub>		Item B <sub>13</sub>
Aggregate A <sub>2</sub>	Item A <sub>21</sub>		Item B <sub>14</sub>
	Item A <sub>22</sub>		Item B <sub>15</sub>
	Item A <sub>23</sub>		Item B <sub>16</sub>
	Item A <sub>24</sub>		Item B <sub>17</sub>
Aggregate A <sub>3</sub>	Item A <sub>31</sub>	Alternative aggregate	Item B <sub>21</sub>
	Item A <sub>32</sub>	$B_2 = A_3^* = A_{31} \cup A_{32}$	Item B <sub>22</sub>
	Item A <sub>33</sub>	Alternative aggregate	Item B <sub>31</sub>
Aggregate A <sub>4</sub>	Item A <sub>41</sub>	$B_3 = A_3^* \cup A_4 = A_{33} \cup A_{41}$	Item B <sub>32</sub>

Correspondence tables should be used to define the links between ICs and national versions. These tables are essential to facilitate international reporting and enable time-series management. Further information on correspondence tables is provided in Chapter 2 above.



# 5

## Key messages and recommendations

This Chapter provides a summary of the Guidelines' key messages.

### 1. STATISTICAL CLASSIFICATIONS: CONCEPTS, COMPONENTS AND DOCUMENTATION

- 1.1 The definitions provided in this Section are taken from the following documents approved by the EG: *Standard Statistical Classifications: Basic Principles* (1999) and *Best Practice Guidelines for Developing International Statistical Classifications* (2014 revision).
- 1.2 The EG is the “*central coordination body for the current and future work on classifications that are the responsibility of the Statistics Division, and for the coordination and review of other classifications that are the responsibility of other international organizations and that have been proposed for adoption by the Statistical Commission*”. It reports regularly to the UNSC.
- 1.3 A statistical classification is “*a set of categories which may be assigned to one or more variables registered in statistical surveys or administrative files, and used in the production and dissemination of statistics. The categories are defined in terms of one or more characteristics of a particular population of units of observation. A statistical classification may have a flat, linear structure or may be hierarchically structured, such that all categories at lower levels are sub-categories of a category at the next level up. The categories at each level of the classification structure must be mutually exclusive and jointly exhaustive of all objects in the population of interest*”.
- 1.4 A statistical classification, to be considered as such, must meet the essential criteria identified by UNSD in consultation with the EG, and notably: the classification is based on a consistent **conceptual basis**; it is **up-to-date, relevant**, and adequate to meet **users' needs**; it is **robust** enough to last for a period of time; it is organized in a **flat** or **hierarchic** structure in which categories are mutually **exclusive** and **exhaustive** and definitions are **clear and unambiguous**; it is **comparable** over time, between collections and to other related standard classifications (national or international); it is **supported** by instructions, manuals, coding indexes, handbooks and trainings to facilitate users.
- 1.5 Categories in statistical classifications are **exhaustive, mutually exclusive, stable, well-described, balanced and relevant**.

- 1.6 The **primary purpose of statistical classifications** is to provide a framework to collect, organize, compile, analyse, disseminate and archive data from both statistical and administrative collections, and to report and compare statistics at international level.
- 1.7 Statistical classifications may be used to facilitate the collection, organization and presentation of statistics, standardize statistical information, aggregate and disaggregate data sets in a meaningful way, and to support policy- and decision-making.
- 1.8 The **classification unit** is the basic unit to be classified in the classification system. Statistical units are the units of observation or measurement for which data are collected or derived. Statistical units may or may not coincide with the classification unit.
- 1.9 The **custodians** of international classifications are the organizations responsible for developing and maintaining the classifications; they are also responsible for supporting the implementation of ICs at national level.
- 1.10 The **International Family of Statistical Classifications** is a group of international classifications that fulfils the basic principles and essential components of international statistical classifications and that have been reviewed and approved by the UNSC or a similar competent body.
- 1.11 The **components** of a statistical classification are: title, identifier and version; structure, coding system and levels; descriptors; explanatory notes; case laws; indexes.
- 1.12 The **title** is the “formal title” associated with the classification (e.g. the “International Standard Classification of Education”).
- 1.13 The **identifier** is the abbreviation of the classification’s title (e.g. ISCED).
- 1.14 The **version** of a classification is a variation of the same classification that reflects the most recent developments in the economy or in a specific sector thereof. A version is valid for a given period of time. New versions should not be created too frequently, to ensure comparability over time.
- 1.15 The **structure** of statistical classifications may be flat or hierarchical. If the structure is flat, it means that it consists of a simple list of categories all of which are on the same level. If it is hierarchical, it envisages categories that are articulated on different levels, in which the lower levels are the most detailed.
- 1.16 The **coding system** follows the classification’s structure and is a key feature of a statistical classification. The codes may be numerical, alphabetical or alphanumerical. When developing a new classification or implementing new codes, it should be ensured that:
- The codes follow an ordered and consistent numbering; jumps should be avoided to the greatest extent possible.
  - In a hierarchical classification, the length of the code properly reflects the level of detail required (the longer the code, the more the detail); however, in some situations, and particularly for database purposes, it may be possible to “normalize” the code by adding **trailing zeros**, to enable coding at levels other than the lowest one (which is the recommended level). In these cases, trailing zeros indicate that categories at the lower level exist in the classification, but that a response may only be coded at a higher level.



A note of caution:

- Code normalization to a standard length may generate misleading information in hierarchical classifications where the zero at the end of the code suggests that no further categories exist at the lower level. Therefore, code normalization is not recommended. If necessary, it can be used for coding and computational purposes in databases only; in methodological documents, in classification structures for output or presentation and in metadata, it is recommended to leave the codes at different length and not add trailing zeros.
- In some classifications, codes begin with a **leading zero**; these may create problems with some applications (e.g. Excel or .csv spreadsheets). If the software does not recognize the zero at the beginning of the code as a digit, the zero risks being deleted from the code. Therefore, the codes should be stored as text (e.g. by adding a single quotation mark (‘), or a letter before the code, or by setting the column type as text) and the use of database software should be preferred.
- **Leading zeros** may also create problems with a number of computing languages (e.g. Java), in which the leading zero means that the code should be treated as octal (for example, in these cases, the '015' string is automatically converted into the number 13 because the leading zero means that the '15' should be treated as octal, which gives 13 in base 10). The solution is to treat numbers as strings (the technical implementation of this feature depends on the software used). Another possible solution is to use alphanumeric codes (e.g. 011 → A011): this allows the code to be automatically stored as text. Arguments against using an alpha code include the potential limitation on the broad levels of classifications (as the categories would be limited to the letters from A to Z), the lengthening of the actual code to accommodate the alpha code itself, related typing issues, or an increase in the classification's levels.

1.17 Along with codes, **descriptors** (sometimes called “definitions”, “names” or “labels”) are necessary to refer to and describe each category of the classification unambiguously: they should be as short as possible (usually one line of text), unique and meaningful. They must illustrate the exact content of the category with certainty. The same descriptor may be repeated at different levels in the classification hierarchy only when it refers to a category that is represented without further subdivision at more than one hierarchical level.

- Exceptionally, for questionnaire or publication purposes, descriptors may need to be further shortened (see the box in Section 1.2.3 above); however, care must be taken to respect the principles of exclusiveness and exhaustiveness and to ensure their comprehensibility in all contexts and their ease of translation.
- To the extent possible, the original descriptors should be retained as they are (since they are internationally recognized standards) and any changes should be avoided: if necessary, and on an exceptional basis, shorter names may be used for specific purposes. However, these should never be used in methodological documents and metadata.

1.18 **Explanatory notes** provide supplementary information on the scope of the classification category and clearly determine the boundaries of each class; unlike descriptors, explanatory notes are not limited in text length (which can also be extensive).

1.19 The term “**case law**” indicates the decisions taken on selected cases that set the rules for the correct application of the classification. The information is made public as an additional tool to support the classification's correct application by users.

- Countries are encouraged to refer any questions on interpretation or proposals for improvement of the classification to the relevant international organizations.
- The query may contribute to a clearer interpretation of the classification and a more consistent data reporting for other countries too
- “Case laws” should also be recorded at national level, when necessary, to document the decisions taken at country level

1.20 A **classification index** consists of a list of words or short text strings which describe a type of object together with the code of the corresponding category. These indexes are particularly helpful to users as they set out the content of each category of the classification through a list of detailed items; ensure consistent interpretation; facilitate coding (manual and automatic); support the review process; and help organize responses to users' requests for information.

## 2. CORRESPONDENCE TABLES AND DATA CONVERSION

- 2.1 A **correspondence table** (or **correlation** or **concordance table**) expresses the relationship between two statistical classifications or different versions or variants of the same classification.
- 2.2 Correspondence tables compare the descriptor and explanatory notes for each category and establish the relevant links accordingly.
- 2.3 In correspondence tables, the **starting** classification (the **source**) is on the left-hand side of the table, while the **target** classification is on the right-hand side. Correspondence tables should be developed starting from the lowest-level categories. Once this is complete, the high-level links may be derived from the lower ones.
- 2.4 When building correspondence tables, different types of links may be encountered:
  - **one-to-one**: categories perfectly match across classifications
  - **one-to-many**: one category in the starting classification splits into several categories in the target one
  - **many-to-one**: two or more categories in the source classification link to one category in the target one
  - **many-to-many**: two or more categories in the source classification link to two or more categories in the target one
- 2.5 Correspondence tables are the first step in developing **conversion** tables that are functional to data conversion, as they provide information on **conversion coefficients** (or split ratios). The list below describes the conversion for each type of link:
  - **one-to-one**: the conversion is straightforward
  - **many-to-one**: the item in the target classification consists of the union of two or more items in the source classification
  - **one-to-many and many-to-many**: the conversion depends mainly on the data and resources available; in some cases, it may be possible to estimate conversion coefficients, but in others, alternative solutions may be preferable.
- 2.6 Since errors, approximation or an inability to assign a value are likely to be introduced when converting data from one classification to another, it is important to clarify the objectives, the data involved, and the cost and benefits of the exercise from the very beginning.
- 2.7 It is recommended to collect data in both versions for at least one year and then attempt reclassification.
- 2.8 When split ratios are not reliable, then breaks in time series or reclassification based on best judgment may be necessary.
- 2.9 The introduction of breaks in time series or reclassification based on best judgment should also be taken into account as a possibility when data availability is limited and the estimation of split ratios is likely to introduce major errors.

### 3. INTERNATIONAL CLASSIFICATIONS FOR AGRICULTURAL STATISTICS

- 3.1 International classifications for agricultural statistics encompass various statistical domains and can be used for several number applications and purposes, ranging from data collection to data dissemination and analysis.
- 3.2 They are maintained by international organizations (custodians), among which FAO, the UNSD, the ILO, UNESCO, the WCO, the WHO and the UNODC.
- 3.3 In the context of international standards, detail may sometimes be insufficient for sectoral applications or national needs; however, this should not discourage organizations from using international standards. Indeed:
- customization is possible, either by increasing detail at the lower level or by developing alternative aggregations for higher-level categories;
  - the customization can be undertaken at country level or by international organizations themselves
- 3.4 The international classifications used for agricultural statistics and presented in these Guidelines are:
- ISIC
  - CPC and its expansion for agricultural statistics
  - SITC
  - HS
  - COICOP
  - COFOG
  - ISCO
  - ICSE
  - ISCED
  - SEEA land use (LUC) and land cover (LCC) classifications
  - FAO WCA classifications.
  - FAO classifications for fisheries and aquaculture statistics
- 3.5 In line with its first pillar, the Global Strategy to Improve Agricultural and Rural Statistics is working to establish a **minimum set of core data**. This is a critical group of variables and indicators that countries should collect to produce key information on agricultural and rural statistics and establish the framework for NSDSs' agricultural and rural components. The quality and comparability of core data is ensured by the adoption of standard statistical classifications, concepts and definitions<sup>52</sup>.

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<sup>52</sup> Once the set of core data is agreed upon at international level, Chapter 3 of these Guidelines will be updated to further link work on classifications with the Global Strategy's first pillar, providing indications on the international classifications and other standards to be used when collecting the recommended set of core data for agricultural and rural statistics.

## 4. IMPLEMENTATION OF INTERNATIONAL CLASSIFICATIONS AT COUNTRY LEVEL

- 4.1 Depending on their level of applicability and on whether the custodian is an international, regional or national organization, statistical classifications may be: **national**, **regional (or supranational)** or **international**.
- 4.2 To ensure data harmonization and comparability, international standards should be taken as points of reference when developing national and supranational schemes, and adapted to suit individual countries' requirements and their specific statistical needs.
  - International classifications are “living tools” and are subject to continuous improvement.
  - Countries play a crucial role: maintaining cooperation between countries and international organizations is vital to ensure the relevance of international classifications at country level.
- 4.3 When implementing international classifications, it is not always possible or appropriate to use them in their original formats and structures. Different solutions may be envisaged to take into account specific requirements and country needs.
- 4.4 When international classifications are used in their original state, the highest degree of comparability is ensured; however, national adaptations may also be developed, to meet user needs while maintaining compatibility with the international classification of reference. Two options are recommended:
  - Case 1: The IC's high-level categories are maintained but further detail is added at the lower level for regional or national purposes. This is the preferred option, as it is fully compatible with international standards at the higher level and provides additional information at the lower level.
  - Case 2: The IC's lower-level items are retained, but different aggregates in NCs or RCs are defined, as the sum or split of the international items. This still allows for a good degree of comparability, because the aggregates may be reconstructed as in the ICs, while items at the lower levels are linked on a one-to-one basis.



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# Annex

## Regional and country best practices

### **A1. REGIONAL INITIATIVES**

Regional (or supranational) organizations are key entities in the promotion of standard classifications in their member countries. Very often, ROs develop regional classifications that are also aligned with international standards and capable of meeting the needs of their member countries. When ROs are committed to the promotion of standard classifications, the beneficiaries are:

- countries, which can implement regional schemes instead of developing national *ad hoc* classifications, *and*
- IOs, for which ROs are a key partner in consultations with member countries.

Strengthening the cooperation between IOs and ROs is crucial to achieving international statistical standardization.

This Annex presents a number of successful (yet different) experiences with classifications conducted at regional level, in particular in Latin America and the Caribbean (ECLAC), West Africa (AFRISTAT), Europe (EUROSTAT) and in former Soviet Republics (CIS-STAT). FAO's experience with the CountrySTAT project is also described.

## A1.1 Economic Commission for Latin America and the Caribbean (ECLAC): Working Group on International Classifications (GTCI)<sup>53</sup>

ECLAC is one of the UN's five Regional Commissions. It is based in Santiago (Chile) and aims to contribute to the economic and social development of Latin America and the Caribbean, and to reinforce economic relations among member countries and with other nations of the world. Currently, ECLAC counts 44 member countries: 33 in Latin America and the Caribbean<sup>54</sup> and 11 Asian, European and North American countries that have historical, economic and cultural ties with the region<sup>55</sup>.



The Working Group on International Classifications (GTCI, *Grupo de Trabajo sobre Clasificaciones Internacionales*) was created at the Sixth Meeting of the Statistical Conference of the Americas (SCA) in 2011. The GTCI regularly reports to the EG and collaborates with the UNSD.



The GTCI aims to support countries in Latin America and the Caribbean in adopting or adapting international classifications at national level, ultimately to contribute to the development of official statistics across different statistical programs in the region.

Among the GTCI's members are 17 National Statistical Offices (NSOs) in Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Panama, Peru, Saint Lucia and Uruguay. The Andean Community, the UNSD and the ILO are also members. At the time of writing, the chair of the GTCI is the *Instituto Nacional de Estadística y Geografía* (INEGI) of Mexico.

The GTCI's objectives are to:

- **identify and promote** cooperation at regional and sub-regional levels, inter-institutional networking, and the coordination and integration of regional initiatives in the field of classifications;
- **strengthen the capacities** of member countries in adopting international classifications;
- **exchange and compile** experiences, knowledge and good practices related to the implementation of international classifications;
- **share information and regularly report** on the progress made by member countries on the adoption of the most recent versions of international classifications and their implementation in national surveys, censuses, national accounts and business registers;
- **facilitate the translation into Spanish** of international classifications, for timely adoption in the region;
- **mobilize resources** to promote the use and dissemination of economic and social classifications;
- **create a network** of experts to help countries engaged in implementing international classifications.

The group met for the first time in Santiago, Chile, in 2012. On that occasion, a Steering Committee and Sub-Committees were formed.

The functions of the **Steering Committee** are:

<sup>53</sup> Castillo Navarrete (2013); presentations and other documents on the GTCI are available on the ECLAC/CEPAL website.

<sup>54</sup> Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of).

<sup>55</sup> Canada, France, Germany, Italy, Japan, Netherlands, Portugal, Republic of Korea, Spain, United Kingdom of Great Britain and Northern Ireland, United States of America.



- facilitation of the execution of activities and monitoring the achievement of the results as defined in the GTCI Action Plan;
- collection and analysis of information on:
  - the problems faced by NSOs in adopting or adapting international classifications and identifying possible solutions
  - new, emerging or declining industries, products and occupations; and sharing the results with members to propose or contribute to the review of related standards
  - best practices in the field of classifications, among members.
- Identification of countries requiring technical assistance;
- Sharing of information between the GTCI and the UN EG, and ensure that the views of Latin American and Caribbean countries are reflected in the EG’s work;
- liaising with IOs and custodians of international classifications;
- preparation and dissemination of GTCI meeting reports.

The work of the **Sub-Committees** focuses on technical issues, such as the translation into Spanish of international classifications (e.g. CPC Ver.2 and 2.1) and supporting material (e.g. the ISIC Rev.4 implementation guide) and the development of training programs, follow-up activities and monitoring of results. The Sub-Committees report to the GTCI Steering Committee.

**TABLE A.1.1**  
**Strengths, benefits and weaknesses of the GTCI as identified by its members**

Strengths	Challenges
<ul style="list-style-type: none"> <li>• first Working Group formally created for the purpose in the region;</li> <li>• custodians of international classifications are involved;</li> <li>• has a direct relationship with the UN EG;</li> <li>• the relevant experience of the country chairing the group (Mexico);</li> <li>• possibility to test any material and program designed by the group in the field – tests are conducted in member countries and then the material and results are made available to all ECLAC countries;</li> <li>• the member countries’ enthusiasm and willingness to share their experience in the adoption or adaptation of the classifications.</li> </ul>	<ul style="list-style-type: none"> <li>• resource constraints and difficult access to funds, for members to attend GTCI meetings and carry out joint activities in collaboration with other organizations;</li> <li>• lack of organizational support in NSOs and necessity to create dedicated units specifically in charge of classifications;</li> <li>• lack of institutional awareness, among NSOs, of the importance of their respective country’s membership of the GTCI and consequent lack of commitment;</li> <li>• <i>as a result</i>, lack of continuity and risk that the representative originally appointed as GTCI member will not be able to participate in the activities of the group and attend meetings on a regular basis.</li> </ul>
Expected benefits	
<ul style="list-style-type: none"> <li>• provides a point of reference for the development of methodological guidelines and recommendations on how to implement international classifications at country level;</li> </ul>	
<ul style="list-style-type: none"> <li>• improves data harmonization and comparability at country, regional and international levels;</li> </ul>	
<ul style="list-style-type: none"> <li>• strengthens NSSs and helps them to respond more effectively to the increasing user demands for data, thus facilitating policymaking;</li> </ul>	
<ul style="list-style-type: none"> <li>• provides an forum where proposals for reviewing international classifications can be raised, discussed and agreed and the region’s point of view may be presented at international level;</li> </ul>	
<ul style="list-style-type: none"> <li>• allows members to develop and boost international collaboration;</li> </ul>	
<ul style="list-style-type: none"> <li>• facilitates information-sharing on international classification review processes, which enables precise and timely planning and the mobilization of the necessary resources for the adoption or adaptation of the most recent international standards.</li> </ul>	

## A1.2 Observatoire Economique et Statistique d'Afrique Subsaharienne: "Nomenclature d'Activités et de Produits" (NAEMA and NOPEMA)<sup>56</sup>

AFRISTAT is a supranational organization established by means of a Treaty signed by 14 constituent countries on 21 September 1993, in Abidjan. Currently, the organization counts 19 member countries: Benin, Burkina Faso, Burundi, Cameroon, Cabo Verde, the Central African Republic, Comoros, Congo, Côte d'Ivoire, Gabon, Guinea, Guinea-Bissau, Equatorial Guinea, Mali, Mauritania, Niger, Senegal, Chad and Togo.



AFRISTAT's mission is to contribute to the development of economic, social and environmental statistics in its member countries and to strengthen their capacities in these domains. It provides advice to national statistical institutes and support for their actions; it rules on the harmonization of concepts, norms and statistical methods.

One of AFRISTAT's major goals is to ensure the comparability and integration of statistical information in the region. To this end, a common system of classification of activities and products was developed in 2000, based on international UN standards. In particular, these were:

- **NAEMA** – the *Nomenclature d'Activités des Etats Membres d'Afristat* (which is based on ISIC), and
- **NOPEMA** – the *Nomenclature de Produits des Etats Membres d'Afristat* (is based on the CPC)

These classifications are established in the *Règlement N° 001/CM/2000 du Conseil des Ministres du 19 Septembre 2000 Portant l'Adoption de Nomenclatures d'Activités et de Produits pour les Etats Membres d'Afristat* (AFRISTAT 2000), which is binding upon member countries. In the Preamble to the *Règlement*, it is stated that:

- The harmonization and comparability of statistical information are at the core of any activity that seeks to promote the economic integration of member states and, therefore, their development;
- given the UN's recommendations in the context of statistical classifications, a system of common nomenclatures for economic activities and products is a prerogative of AFRISTAT;
- a common management system and uniform interpretation of classifications is a fundamental condition for the integration and exchange of information among members.

NAEMA follows a four-level hierarchical structure: the first level (called "Section") is identified by a letter, the second level ("Division") by two digits, and the third and fourth levels ("Groups" and "Classes") by three and four digits respectively.

### Example A.1:

NAEMA Code for "01.13 - Growing of oleaginous crops"

The item is classified under Section A. "Agriculture, hunting and forestry"

01 indicates the Division "Agriculture, hunting and related activities"

01.1 is the Group "Growing of cereals and other cultivations n.e.c."

01.13 is the Class "Growing of oleaginous crops"

NOPEMA adopts a five-level structure: it corresponds to NAEMA one-to-one at four digits, and adds an additional digit at lower level.

<sup>56</sup> AFRISTAT (2014); Ngok (2011).

**Example A.2:**

NOPEMA Code “01.13.1 - Peanuts”

At four digits (01.13), it has a one-to-one correspondence with the NAEMA code. An additional level is introduced to identify the product “Peanuts”:

01 indicates the Division “Agriculture, hunting and related activities”

01.1 is the Group “Growing of cereals and other cultivations n.e.c.”

01.13 is the Class “Growing of oleaginous crops”

01.13.1 is the Sub-class “Peanuts”

In 2009, NAEMA and NOPEMA were subject to a review process, to align them to the latest versions of the reference standard classifications. NAEMA and NOPEMA rev.1 entered into force in 2011. The new versions feature increased detail at the lower level, compared to the previous versions<sup>57</sup>. Items in both classifications are selected from among the most relevant in the region; as a result, both NAEMA and NOPEMA include a lower number of items compared to ISIC and the CPC.

The maintenance and review of the classifications is ensured by the *Comité de Gestion des Nomenclatures* (the Committee for the Management of Nomenclatures) and the *Groupe Technique* (Technical Group). The Committee is composed of AFRISTAT representatives, while the Technical Group consists of representatives of the member states. The tasks of these bodies are to ensure the correct interpretation of the classifications, develop explanatory notes, and prepare and adopt revisions in line with the review of international standards.

The implementation of the new revised versions of NAEMA and NOPEMA in member states is expected to take place between 2011 and 2015.

**BOX 17****“Coherence and Comparability”**

African statistics shall be internally coherent over time and allow for comparison between regions and countries. To this end, these statistics shall make combined use of related data derived from different sources. It shall employ internationally recognized and accepted concepts, **classifications**, terminologies and methods.”

*African Charter on Statistics, African Union*

<sup>57</sup> NAEMA rev.1 has 21 Sections, compared to 17 in the initial version; 88 Divisions vs. 60; 156 Groups vs. 149; and 290 Classes vs. 262. NOPEMA rev.1 has 673 Sub-classes as compared to 573 in the initial version.

### A1.3 The Statistical Office of the European Union (EUROSTAT)

EUROSTAT is the Directorate-General for Statistics of the European Commission; it serves as the EU's statistical office. Its main responsibilities are to provide statistical information to EU institutions and to promote the harmonization of statistical methods across its member states and candidates for accession, as well as EFTA<sup>58</sup> countries. Established in 1953, EUROSTAT aims to:



- provide the Commission and its departments with high-quality statistical services functional to the development, implementation and evaluation of policies;
- develop a partnership with the statistical services of the European Central Bank;
- produce, with the assistance of the European Statistical System, reliable, comparable and relevant statistics in the EU;
- disseminate Community statistics to the European public, businesses and decision-makers, as part of its role as a public service provider;
- support non-EU countries, particularly candidate countries that wish to develop their statistical systems within the framework of the EU's external relations.

EUROSTAT's classification system provides member countries with common standards and definitions in all statistical domains. The use of EUROSTAT's classifications is mandatory for member countries. Further information on the classifications is available on Eurostat's *Ramon* metadata server (EUROSTAT, n.d.-c).

- ***Nomenclature Générale des Activités Economiques dans les Communautés Européennes (NACE)***

The Statistical Classification of Economic Activities in the European Communities (**NACE**<sup>59</sup>, from its French name *Nomenclature Générale des Activités Economiques dans les Communautés Européennes*), was first developed in 1970 and constitutes the framework for collecting and presenting a large range of statistical data according to economic activity, in the fields of economic statistics (e.g. production, employment, national accounts) and in other statistical domains.

Although the two classifications were originally rather different, today (and since NACE Rev.1) NACE and ISIC are closely linked: at high level, the items correspond, whereas NACE is more detailed than ISIC at the lower level. To ensure international comparability, NACE definitions and guidelines are consistent with those of ISIC. At higher level, the codes in NACE are very close to ISIC, with the difference that in NACE, the degree of detail is greater and a decimal point separates the first two digits from the third and fourth. The latter feature means that further detail may be added in NACE when required.

Unlike from ISIC, which is a recommended standard, NACE is legally binding upon the EUROSTAT member states.

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<sup>58</sup> European Free Trade Association, which comprises the Republic of Iceland, the Principality of Liechtenstein, the Kingdom of Norway, and the Swiss Confederation.

<sup>59</sup> See Eurostat (2008).

**Example A.3:**

NACE Rev.2 code compared to ISIC Rev.4 code

NACE code	NACE descriptor	ISIC code	ISIC descriptors
10	Manufacture of food products	10	Manufacture of food products
10.1	Processing and preserving of meat and production of meat products	101	Processing and preserving of meat
10.11	Processing and preserving of meat	1010	Processing and preserving of meat
10.12	Processing and preserving of poultry meat		
10.13	Production of meat and poultry meat products		

- **Classifications of products (CPA, EU Regulations, PRODCOM and the Combined Nomenclature)**

***The Classification of Products by Activity (CPA)***

The European Classification of Products by Activity (CPA) (Eurostat, 2009) is the European version of the CPC. Similar to NACE, the CPA is legally binding upon the EUROSTAT member states; this distinguishes it from the CPC, which is a recommended standard. The CPA was developed in 1993 and updated in 1996 and 2002; a new version, which is in line with CPC Ver.2, was introduced in 2008.

Although the CPA is largely compatible with the CPC, it often differs from the CPC, because it may contain more or less detailed and display alternative breakdowns. While individual categories are often identical to their counterparts in the CPC, the CPA uses a completely different aggregation structure. While the CPC's structure is based on product characteristics, the CPA's structure rigorously follows the industry of origin. The CPA's structure is therefore an extension of the NACE structure, in which a decimal point and two more digits are added to the corresponding NACE code.

**Example A.4:**

CPA code compared to CPC code

CPA Code	CPA Descriptors	CPC Code	CPC Descriptors
01	Products of agriculture, hunting and related services	01	Products of agriculture, horticulture and market gardening
01.1	Non-perennial crops	n/a	
01.11	Cereals (except rice), leguminous crops and oil seeds	011	Cereals
...		...	
01.11.3	Barley, rye and oats	n/a	
01.11.31	Barley	0115	Barley
		01151	Barley, seed
		01152	Barley, other
01.11.32	Rye	0116	Rye
		01161	Rye, seed
		01162	Rye, other
01.11.33	Oats	0117	Oats
		01171	Oats, seed
		01172	Oats, other

### ***Classification of Agricultural Products (EU Regulations)***

Although the CPA also includes a list of agricultural items, in EUROSTAT, the product classifications of reference for agricultural statistics are defined in the **EU Regulations**, in particular:

- Commission Regulation (EC) No. **1242/2008** of 8 December 2008 establishing a Community typology for agricultural holdings<sup>60</sup>
- Commission Regulation (EC) No. **867/2009** of 21 September 2009 amending and correcting Regulation (EC) No 1242/2008 establishing a Community typology for agricultural holdings<sup>61</sup>.

However, EUROSTAT has planned to improve the alignment of this classification to international standards, and particularly to the CPC. The collaboration between EUROSTAT and FAO in this context is noted.

### ***Classification of Manufactured Goods (PRODCOM)***

**PRODCOM** (from the first letters of the French words "*PRO*Duction *COM*munaire") is a EUROSTAT survey and database (Eurostat, 2015) that provides statistics on the production of manufactured goods. The products featured are specified in the PRODCOM list, which contains slightly less than 4,000 items. The **PRODCOM list** is based on NACE and the CPA; most of the PRODCOM codes correspond to the *Combined Nomenclature* (CN) codes on a one-to-one or one-to-many basis. The products are identified by an eight-digit code:

- the first four digits correspond to NACE
- the first six correspond to the CPA code
- the remaining digits are PRODCOM-specific

#### **Example A.5:**

Structure of PRODCOM code

XX.XX	NACE code
XX.XX.XX	CPA code
XX.XX.XX.XX	PRODCOM CODE

### ***Classification of goods for international trade***

The **Combined Nomenclature** (CN) (European Commission, 2015) is the trade nomenclature used by the EU, on the basis of the WCO's HS. Compared to the HS, the CN is more detailed; this enables it to meet the needs of the Common Customs Tariff and of the Community's external trade statistics. The code is composed of the HS code, with two further digits added to denote the lower level.

The regulation of reference is Council Regulation (EEC) **No. 2658/87** of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff. An updated version is published every year to take into account WCO developments on HS review, or WTO updates regarding conventional rates of duty. As in the HS, the CN Explanatory Notes<sup>62</sup> are an important aid to the interpretation of the scope of the various tariff headings; however, they are not legally binding.

60 Commission Regulation (EC) No 1242/2008 of 8 December 2008 Establishing a Community Typology For Agricultural Holdings, [2008] Official Journal of the European Union L 335/3.

61 Commission Regulation (EC) No 867/2009 of 21 September 2009 amending and correcting Regulation (EC) No 1242/2008 establishing a Community typology for agricultural holdings, [2009] Official Journal of the European Union L 248/17.

62 The Explanatory Notes were established by Council Regulation (EEC) No. 2658/87 on the tariff and statistical nomenclature and on the Common Customs Tariff; the latest version is now available on the Official Journal of the European Union C 137, vol. 54, 6 May 2011.

- **Classification of expenditures: COICOP HICP**

EUROSTAT has adapted the UN’s COICOP to European needs in terms of price statistics and the compilation of the Harmonized Index of Consumer Prices (HICP) and Purchasing Power Parity (PPP) and household budget surveys in the EU and the Eurozone (Eurostat, 2014). The changes included:

- the exclusion of certain COICOP items, as they were not covered by the HICP;
- the combination of certain subclasses (4 digits), to ensure that their weight was greater than one part per thousand in most Member States;
- a five-digit level was added to provide additional detail at a lower level.

- **Classifications of land use and land cover: Land Use and Cover Area frame Survey (LUCAS)<sup>63</sup>**

Since 2001, EUROSTAT has carried out a survey on land use and cover in the European Union: the Land Use and Cover Area frame Survey (LUCAS). The aim of LUCAS is to gather harmonized information on land use and land cover and their changes over time, and to provide information on the interaction between agriculture, the environment and rural areas, including on irrigation and land management. The survey is conducted every three years (the most recent having been undertaken in 2012 and 2015) and observations are made and registered on the ground. The information collected is then organized according to the LUCAS classifications on land use and land cover, in which these concepts are considered as related but separated. The classifications are characterized by a hierarchical structure. The classes are mutually exclusive.

**Example A.6:**

High-level categories of LUCAS land cover classification (2012)

Code	Title
A00	Artificial Land
A10	Built-Up Areas
A20	Artificial Non-Built Up Areas
B00	Cropland
B10	Cereals
B20	Root Crops
B30	Non-Permanent Industrial Crops
B40	Dry Pulses, Vegetables and Flowers
B50	Fodder Crops (mainly leguminous)
B70	Permanent Crops: Fruit Trees
B80	Other Permanent Crops
C00	Woodland
D00	Shrubland
E00	Grassland
F00	Bare Land and Lichens
G00	Water Areas
H00	Wetlands

<sup>63</sup> For the LUCAS survey methodology, see <http://ec.europa.eu/eurostat/web/lucas/methodology>.

**Example A.7:**

High-level categories of LUCAS land use classification (2012)

Code	Title
U100	Agriculture, Forestry and Fishing
U110	Agriculture
U120	Forestry
U130	Aquaculture and Fishing
U140	Mining and Quarrying
U200	Manufacturing and Energy
U210	Energy Production
U220	Industry and Manufacturing
U310	Transport, Communication Networks, Storage, Protective Works
U320	Water and Waste Treatment
U330	Construction
U340	Commerce, Finance, Business
U350	Community Services
U360	Recreation, Leisure, Sport
U370	Residential
U400	Unused and Abandoned Areas



#### A1.4 Interstate Statistical Committee of the Commonwealth of Independent States (CIS-STAT)

The Commonwealth of Independent States (CIS) is an RO composed of the former Soviet Republics which were formed pursuant to the breakup of the Soviet Union. Its member countries are Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.



In CIS countries, statistics are coordinated by the Interstate Statistical Committee of the Commonwealth of Independent States (**CIS-STAT**<sup>64</sup>), which is based in Moscow, Russian Federation. CIS-STAT was established in 1991 to enable the coordination of statistical activities in CIS countries, the development of unified statistical methodologies in compliance with international standards, the comparability of statistical data and the provision of assistance to CIS NSSs.

CIS-STAT is actively involved in the harmonization of statistical classifications with international counterparts, notably the UN and EUROSTAT. In particular, the EUROSTAT standards NACE and CPA/PRODCOM are taken as points of reference for industrial activities and products, the UN classifications COICOP and COFOG for expenditures, ILO standards (ISCO) for occupation and the HS for trade (UNSD, 2013g).

However, this process does encounter challenges (CIS-STAT, 2013), in particular the lack of consistent translations into Russian of UN and EUROSTAT classifications and the incomplete harmonization of international standards. On the other hand, difficulties also arise due to the diversity of the national languages in the region and the different adaptations made by countries of the same international standard.

To address some of these constraints, CIS-STA:

- monitors the compliance of the content, structure, terminology and codes at national level with those in the international standards of reference;
- helps to minimize discrepancies in the translations of classifications into/from national languages;
- to ensure relevance and uptake at national level, when applying international classifications at regional level it takes into account countries' needs and characteristics, including features of national legislation.

To ascertain the situation and accordingly plan its interventions, CIS-STAT conducts in-depth analyses of all classifications used at national level by all CIS countries, and determines their degree of comparability with the international standards of reference. The process involves statisticians from NSOs as well as from CIS-STAT, but also, and when possible, specialists and consultants from international organizations, national standardization agencies and specialized ministries and departments.

<sup>64</sup> General information on CIS-STAT is available on the organization's homepage ([http://www.cisstat.com/eng/frame\\_cis.htm](http://www.cisstat.com/eng/frame_cis.htm)) and the UNSD's *Directory of statistical services of international organisations* <https://unstats.un.org/unsd/accsub-public/docs/CIS-STAT.pdf>.

### A1.5 FAO CountrySTAT project

Funded by the Bill & Melinda Gates Foundation, and led by FAO in collaboration with several partners, CountrySTAT (FAO, 2015a and n.d.-b)<sup>65</sup> is a web-based information technology system that aims to provide nationally-owned, accessible and high-quality statistics on food and agriculture at national and subnational levels.



Currently, CountrySTAT counts 57 member countries in Africa, Asia and Latin America and the Caribbean and five regional Partner Organizations.

One of the major goals and achievements of the CountrySTAT project is the **improvement of the coordination among the various institutions in charge of statistics in countries**, such as NSOs and government ministries. This effort is targeted at **harmonizing their data** through the **adoption of international standards** for agriculture and food security, thus enabling the presentation of consistent figures at national level.

In addition, the project focuses on ensuring the consistency of the statistics disseminated through the CountrySTAT project with the **FAOSTAT** database (FAO, n.d.-e), thus ensuring comparability of national and international data.

One of the project's core exercises consists in the development of national classifications in line with the classification of products used in FAOSTAT, i.e. the **FCL** (FAO, 2015b and n.d.-d), and in future with the CPC. The FCL lists almost 700 items, grouped in 20 chapters and coded with a four-digit code. It provides details on the commodities of major international statistical importance, while local products of minor significance at international level are aggregated with other commodities.

The starting point of this harmonization effort is the development of **correspondence tables** between the FCL and national lists (if available) or agricultural products that are relevant to the country. In some cases, correspondence tables with the CPC have also been established.

Challenges do arise during this process. In particular, the **translation** of local names and the identification of the correct match within the FCL are often difficult, as common names may vary significantly among countries. The FCL is supported by a number of possible common names that are used by countries for each commodity; this is extremely helpful, but in many cases is not exhaustive. Another research support is the use of scientific names to identify the products; however, Latin names are often unavailable in the countries. Research and consultation between FAO and national officers is often required to figure out the correct map, and information on the products' physical characteristics and uses are important elements of analysis.

Another challenge is posed by the **lack of detail** in the FCL in relation to local products. As mentioned above, the FCL reflects the major international products, in terms of production and contribution to world food security. However, in many cases, CountrySTAT countries must add detail on local products that are of minor significance at international level but of greater importance nationally. In these cases, an expansion is added to the FCL four-digit codes to take local products into account. An example of this practice is provided below.

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<sup>65</sup> For a list of CountrySTAT partners, see [www.fao.org/economic/ess/ess-capacity/countrystathome/partners/en/](http://www.fao.org/economic/ess/ess-capacity/countrystathome/partners/en/).

**Example A.8:**

Additional codes for sorghum for countries in which different varieties are available (red and white)

FCL CODE	FCL DESCRIPTOR	DEFINITION	NATIONAL CODE	DESCRIPTOR
83	SORGHUM	<i>Sorghum spp.</i> : guinea corn ( <i>S. guineense</i> ); common, milo, feterita, kaffir corn ( <i>S. vulgare</i> ); durra, jowar, kaoliang ( <i>S. dura</i> )	8301	WHITE SORGHUM
		A cereal that has both food and feed uses. Sorghum is a major food grain in most of Africa, where it is also used in traditional beer brewing. It is desirable to report hybrid and other varieties separately.	80302	RED SORGHUM

## **A2. COUNTRY CASE STUDIES AND BEST PRACTICES**

The following sections illustrate experiences and best practices from countries that have implemented international classifications at national level. The countries described are:

- Africa: Senegal and Mozambique
- Asia and Pacific: China, Bangladesh, Malaysia, Philippines and Indonesia
- Latin America and the Caribbean: Brazil
- North Africa: Tunisia

This is a “living” section; countries that wish to present their experience herein are encouraged to contact the author of these Guidelines ([valentina.ramaschiello@fao.org](mailto:valentina.ramaschiello@fao.org)).

## A2.1 AFRICA

### A2.1.1 Senegal<sup>66</sup>

Senegal has undertaken an important reform of its NSS. In 2005, the *Agence Nationale de la Statistique et de la Démographie* (ANSD – National Agency for Statistics and Demography) was created to replace the *Direction de la Prévision et de la Statistique* (DPS – Directorate of Forecasts and Statistics).



The ANSD is the central body for the coordination of the NSS and is responsible for the harmonization of the methods, concepts, definitions, norms, classifications and nomenclatures used within the NSS.

Accordingly, high priority was given to the development of an integrated system of classifications that included agriculture and that enabled data comparability across different statistical domains at national level. As the system is based on international standards, harmonization at international level is also strengthened: national classifications are aligned with international standards and adapted to the national context.

In Senegal, a suite of classifications is in place for the various statistical domains of application. These are:

- *Economic activities*: NAEMAS<sup>67</sup>, which is the national application of NAEMA<sup>68</sup>, the classification of economic activities developed by AFRISTAT and based on ISIC
- *Products*: NOPEMAS<sup>69</sup>, the national application of NOPEMA<sup>70</sup>, the classification of products developed by AFRISTAT and based on the CPC
- *National accounts*: NAEMAS and NOPEMAS
- *Economic activities for industrial statistics*: SYSCOA<sup>71</sup>, the accounting system of West Africa, which is linked to NAEMAS
- *International trade*: the HS;
- *Consumer prices*: NCOA<sup>72</sup>, the national classification of expenditures based on the UN's COICOP.

**Figure A.9: Senegal's statistical classification system and its relations with international standards**

INTERNATIONAL CLASSIFICATIONS (UNSD and WCO)			
ISIC	CPC		
REGIONAL CLASSIFICATIONS (AFRISTAT)		COICOP	HS
NAEMA	NOPEMA		
NATIONAL CLASSIFICATIONS (ANSD SENEGAL)			
NAEMAS	NOPEMAS	NCOA	HS Senegal

To develop **NAEMAS**, the AFRISTAT standard NAEMA was taken as a point of reference and condensed from four to two levels. Groups and sections were aggregated, finally resulting in 42 branches and 93 sub-branches.

<sup>66</sup> See Sadio (2010).

<sup>67</sup> This acronym stands for "NAEMA Senegal".

<sup>68</sup> Acronym for "Nomenclature d'Activités des Etats membres d'Afristat".

<sup>69</sup> Acronym for "NOPEMA Senegal".

<sup>70</sup> Acronym for "Nomenclature de Produits des Etats membres d'Afristat".

<sup>71</sup> Acronym for "Système Comptable Ouest Africain".

<sup>72</sup> Acronym for "Nouvelle Classification Ouest Africaine".

For example, Division 01, “Agriculture, hunting and related service activities”, was restructured into the three branches of “Subsistence agriculture”, “Industrial or export agriculture”, and “Animal production and hunting”.

Under this Division, Groups were combined with classes and resulted in the following sub-branches:

- growing of cereals
- growing of roots and tubers
- growing of leguminous crops, plants and flowers, fruits
- growing of oilseed crops
- growing of cotton
- growing of other crops, industrial or for export (tobacco, coffee, tea, cashew nuts etc.)
- raising of bovine animals, ovine, caprids and other animals
- raising of birds
- hunting

The coding system adopted by Senegal is that used by NAEMA, customized to suit the revised structure and the country’s specific needs. For example, NAEMA’s Code 01.11 “Cultivation of cereals” is Code 010 in NAEMAS.

As for **NOPEMAS**, the first two levels correspond to NAEMAS (branches and sub-branches) and an additional level is developed at lower level. The adjustments consist in increasing the level of detail for relevant local products and the aggregation of NOPEMA categories in cases of minor relevance to the national context.

### A2.1.2 Mozambique<sup>73</sup>

Before 1997, the National Institute of Mozambique (INE) had a single classification for activities and products, the *Classificação de Atividades e Produtos* (CAP – Classification of Activities and Products). The review of the CAP resulted in two separate schemes for economic activities and products respectively, which were both highly harmonized with international standards. Both schemes were approved in 1999 through a resolution of the *Conselho Superior de Estatística*. The schemes are:

- **CNBS:** *Classificação Nacional de Bens e Serviços* (National Classification of Goods and Services) aligned with CPC Ver.1, HS, CPA, and the classifications of goods and services of Portugal (also abbreviated as CNBS) and of PALOP<sup>74</sup> countries;
- **CAE Rev.1:** *Classificação de Atividades Económicas* (Classification of Economic Activities), aligned with ISIC Rev.3, NACE Rev.1, and the classifications of economic activities of Portugal (CAE Rev. 2) and of PALOP countries.



The CNBS was developed following the basic principles of *exhaustiveness* and *exclusiveness* established for statistical classifications by the UN. It is the result of the integration of various statistical classifications, designed mainly for statistical purposes, and is used especially in the field of economic statistics, although it may also have other applications. It is considered by the INE as a “*crucial step for the development and consolidation of the National Statistical System and as a vital tool for statistical harmonization*”<sup>75</sup>. It aims to coordinate goods and services production surveys by economic activities; to compare statistics at national, regional and international levels; to facilitate data reporting in national, regional and international surveys; and to enable information access by suppliers, producers and users of statistical information through a standard, integrated and multifunctional classification framework.

In the CNBS, at the higher level, products are defined according to the economic activity of origin, which enables a strong harmonization and symmetry with CAE (and therefore ISIC); indeed, one statistical unit in CAE (an enterprise) corresponds to many products in the CNBS. At the lower level, national detail is defined with reference to CPC ver.1.0 subclasses, to which the CNBS is linked on a one-to-one basis.

The codification system is a key feature of the CNBS: the system is an eight-level alphanumerical code (the levels are: section, division, group, class, subclass, category, subcategory, position). Sections are identified by letters (A-Q), as in the ISIC structure; divisions corresponds to the first two-digits of the code; and the other positions are each indicated by one digit. The result is a nine-position alphanumerical code, which is divided by dots and linked to the codes of the international classifications of reference to facilitate mapping (Example A.10).

<sup>73</sup> The national classifications discussed here are provided by the CountrySTAT project.

<sup>74</sup> Acronym for “Países Africanos de Língua Oficial Portuguesa”.

<sup>75</sup> This statement is taken from the CNBS-Rev.1, *Nota Introdutória*.

**Example A.10:**

CNBS code structure

A-Z	Section
XX	Division (ISIC, CAE)
XX.X	Group (CAE)
XX.X.X	Class (CAE)
XX.X.X.X	Subclass (CAE)
XX.X.X.X.X	Category (CPC)
XX.X.X.X.X.X	Subcategory (national detail)
XX.X.X.X.X.X.X	Position (national detail)

**Example A.11:**

Products listed under CNBS A01.12.01 “Products of horticulture, fresh or chilled”

**01 12 0 1 Products of horticulture, fresh or chilled**01 12 0 1 1 Roots, tubers and bulbs

01 12 0 1 1 1 Onions and shallots

01 12 0 1 1 2 Common garlic

01 12 0 1 1 3 Carrots

01 12 0 1 1 4 Turnip, radish, *beterraba* (*Beta vulgaris*) for salad

01 12 0 1 1 5 Other roots, tubers and bulbs



## A2.2 ASIA AND PACIFIC

### A2.2.1 China<sup>76</sup>

In China, the classifications of industrial activities and products are harmonized with the UN's ISIC and CPC standards.



The **Industrial Classification for National Economic Activities of China (ICNEA)** was developed in 1984 and has since been revised in accordance with the latest versions of ISIC, in 1994 (Rev.1), 2002 (Rev.2) and 2009 (Rev.3). The current version (linked to ISIC Rev.4) entered into force in 2011, and it is planned to undertake the next review in eight-ten years' time. To date, ICNEA has been used in all surveys conducted by the China's National Bureau of Statistics (NBS). For national accounts, a standard created especially for the purpose is implemented.

The ICNEA has a four-level hierarchical structure; the coding system follows the same alphanumerical codes as those of ISIC Rev.4. The differences consist in some aggregations and breakdowns developed by China's NBS to meet national needs and specificities.

As for the classification of products, the development of a national classification of products was launched in 2004. It involved a large number of stakeholders, ranging from NBS experts in the subject matter, to representatives of other governmental organizations and of the private sector. The first draft of the **Product Classification for Statistical Use** was released in 2009. This Product Classification is now widely used in national statistics and product surveys undertaken by the NBS and by other government departments. As for the structure, at section level, the names and codes of items correspond to those of the CPC Ver.1. At the division level, the CPC codes were modified to conform to the limit of nine items per level and to capture details on local products. This coding approach is applied at each level, so that the classification can allocate up to 99 items per level (instead of the nine-level maximum that applies in the CPC).

#### Example A.12:

Code structure in China's Product Classification

0101 (four digits)

010101 (six digits)

01010101 (eight digits)

To meet national specificities and needs of both statistical and administrative nature, alternative aggregations and additional breakdowns were also introduced in the classification, such that the number of categories within each level of the Product Classification is different from those in the CPC.

#### Example A.13:

Alternative aggregations in China's Product Classification (in bold green the differences as compared to CPC)

CPC Ver. 1.1 (groups)	China Product Classification
011 Cereals	0101 Cereals
012 Vegetables	<b>0112 Vegetables and mushrooms</b>

<sup>76</sup> See China (2008); for the classification of products, see China (n.d.)

	<b>0104 Beans</b>
013 Fruit and nuts	0116 Fruit and nuts
014 Oilseeds and oleaginous fruits	0103 Oilseed
015 Edible roots and tubers with high starch or inulin content	0102 Tubers
016 Beverages and spice crops	0117 Tea and beverage materials
017 Unmanufactured tobacco	0108 Unmanufactured tobacco
018 Plants used for sugar manufacturing	0107 Sugar
0109 Raw vegetable materials n.e.c.	<b>0105 Cotton</b>
	<b>0106 Raw hemp</b>
	<b>0109 Forage crops</b>
	<b>0113 Flowers</b>
	<b>0114 Bonsai and horticultural products</b>
	<b>0115 Plants species</b>
	<b>0118 Perfume raw materials</b>
	<b>0119 Chinese herbal medicine</b>

**Example A.14:**

Additional breakdowns for Rice in China's Product Classification

CPC Ver.1.1 (sub-class)	China Product Classification
01130 Rice, not husked	010101 Paddy
	01010101 Indica rice
	0101010101 Kinds with Indica rice
	0101010199 Other early Indica rice
	01010102 Late Indica rice
	01010103 In Indica
	01010104 Japonica
	01010105 Glutinous
	01010199 Other rice

### *A2.2.2 Bangladesh<sup>77</sup>*

The Bangladesh Bureau of Statistics (BBS) has developed the Bangladesh **Central Product Classification (BCPC)**, based on the structure and underlying principles of CPC Ver.2. It consists of a system of categories that cover goods and services and that are both exhaustive and mutually exclusive.



Until the BCPC was developed, no classification was used for products statistics. Bangladesh is therefore taken as an example of fruitful cooperation with IOs (namely, the UNSD) in the development of a national standard that meets the need and specificities of the country while being, at the same time, fully aligned with international schemes.

The BCPC provides a point of reference for recompiling basic statistics from their original classifications into a standard classification for analytical use. It aims to enhance harmonization among various fields of economic and related statistics, and to strengthen the role of national accounts as an instrument in the coordination of economic statistics. The BCPC consists of a comprehensive classification of all goods and services and provides a framework for the international comparison of various kinds of statistics that deal with goods, services and assets, such as: agricultural statistics, industrial statistics, national accounts statistics, price statistics, foreign trade statistics and balance of payment statistics.

As in the CPC, the classification follows a five-digit structure, divided into the levels of Sections, Divisions, Groups, Classes and Sub-Classes. Different uses for and types of statistics may require different levels of aggregation. Thus, it may be necessary or desirable to use different BCPC levels of detail depending upon the purpose. For example, for national accounting, it may be necessary to classify data at a different level of detail from that required for industrial statistics. Similarly, data on production obtained from establishments can usually be classified in far more detail than data on capital formation obtained from administrative reporting systems. The BCPC's hierarchical structure provides a framework for the comparable classification of data at different levels of detail.

The BCPC's coding system is hierarchical and purely decimal. Sections are identified by the first digit, Divisions by the first and second digits, Groups by the first three digits, Classes by the first four digits and Sub-classes by all five digits.

The Sections' codes range from 0 to 9. Each Section is divided into nine Divisions, as in the standard CPC. In the BCPC, there is further breakdown at Sub-Class level to identify products that are relevant at national level. This has resulted in over 200 additional Sub-Classes in the BCPC, compared to those in the CPC Ver.2.

The BCPB is complemented by a user guide, which is also available in English.

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<sup>77</sup> See Bangladesh (2013); Islam (2008); UNSD (2013b); and UNSD (2013c).

**Example A.15:**

Additional breakdown for Code 0113 in BCPC

Detail Structure/Classification						
Group	Class	Sub-class	Description English	Description Bangla	Corresponding	
					HS-2007	BSIC-2009
Section 0	Agriculture, forestry and fishery products			কৃষি, বন এবং মৎস্য প্রকৃতি		
Division 01	Products of agriculture, horticulture and market gardening			কৃষিজাত পণ্য, উদ্যানকর্ষণ এবং বাগানের জন্য বাগান চাষ		
011	Cereals			শস্য		
	0111	Wheat		গম		
		01111	Wheat, seed	গম, বীজ	1001.10..90*	0111
		01112	Wheat, other	গম, অন্যান্য	1001.10*.90*	0111
	0112	Maize (corn)		ভুট্টা (শস্য)		
		01121	Maize (corn), seed	ভুট্টা (শস্য), বীজ	1005.10	0111
		01122	Maize (corn), other	ভুট্টা (শস্য), অন্যান্য	1005.90	0111
	0113	Rice (paddy)		ধান		
		01131	Rice, seed	ধান, বীজ	1006.10*	0112
		01132	Rice paddy, other (not husked)	অন্যান্য ধান (কৃষকৃত নয়)	1006.10*	0112
		01133*	Aus paddy	আউশ ধান		
		01134*	Aman paddy	আমন ধান		
		01135*	Boro paddy	বোরো ধান		
		01136*	Aromatic paddy	সুগন্ধি ধান		

### A2.2.3 Malaysia<sup>78</sup>

Malaysia has developed an integrated system of economic classifications based on international standards, which includes the following:

- Malaysia Standard Classification of Occupations (**MASCO**), based on the ISCO (ILO);
- Malaysia Standard Industrial Classifications (**MSIC**), based on ISIC;
- Malaysia Classification of Products by Activity (**MCPA**), based on the CPC;
- National Account Industrial Classification 2000 (**NAIC**);
- National Harmonized System and the ASEAN Harmonized Tariff Nomenclature (**AHTN**), which are based on the HS and include further detail at lower level when necessary.



Other international classifications used by the Department of Statistics of Malaysia are COFOG, COICOP and the SITC<sup>79</sup>.

The **MASCO** is the national benchmark classification for occupations and describes the occupational structure and national employment. It is developed by the Ministry of Human Resources and aligned with the ILO's ISCO. The Ministry of Human Resources is responsible for maintaining the classification and to ensure that it properly describes changes in the economy and the employment structure. The case of Malaysia is significant, because in the past 10-15 years, the Malaysian economy and employment structure have changed rapidly, shifting from manufacturing to commerce and services. This has led to some challenges in the revision from MASCO-98 to MASCO-08 (released in 2008), as occupations in the group of managers, professionals and technicians moved more rapidly than occupations in other major groups. The MASCO-98 review involved stakeholders from government agencies and the private sector; workshops and surveys were organized to ensure that the classification would reflect the new job market. MASCO is continuously under review to ensure that changes and developments in the employment structure and the emergence of new occupations in the country are reflected.

MASCO's structure and coding system are the same as those of ISCO, although MASCO allows for additional detail where necessary to meet the country's specificities.

The **MSIC** is based on the UN's ISIC and is prepared by the Department of Statistics Malaysia, in consultation with relevant ministries and government agencies, for the collection, compilation and publication of statistics from censuses and surveys and administrative records. The current version is MSIC 2008 Version 1.0, an update of MSIC 2000; it is aligned to ISIC Rev. 4 and some modifications have been made to suit national requirements. New economic activities, technological progress and the new business environment have led to considerable changes in the structure of the Malaysian economy: this new version of the MSIC fully takes into account these recent developments, as well as the emergence of new industries in Malaysia.

The **NAIC 2000** is a classification of all economic activities in Malaysia used in the compilation of national accounts. There are 698 industries in the MSIC, but not all of their output flow can be traced. These industries are therefore aggregated in the NAIC.

The first two digits of the NAIC structure identify the activity category, i.e. whether it is an activity performed by the private sector, public sector or non-profit institutions serving the households sector. The last three digits refer to national accounts industries. Compared to the MSIC, the third, fourth and fifth digits in NAIC do not carry any

<sup>78</sup> See Malaysia (2009).

<sup>79</sup> All classifications and related documents are available on the Department's official portal: <https://www.statistics.gov.my/>.

specific meaning (such as Division, Group or Class) but rather only refer to the aggregation of industries contained in the MSIC. Activities at may be compared at international level by linking the NAIC with the MSIC and ISIC.

The **MCPA** is the classification of goods and services by economic activities developed by the Department of Statistics of Malaysia. It is based on CPC Ver.2 and the HS 2007, as an update of the previous commodity classification based on CPC Ver. 1 and the Malaysian Trade Classification and Customs Duties Order (HS) 2002.

The MCPA's objective is to provide a standard framework for all products and services, whether produced within the country or imported. The MCPA, as a standard commodity classification, aims to facilitate the tabulation of statistics requiring product detail. These statistics cover production, intermediate and final consumption, capital formation, foreign trade or prices. The classification may also be used as one of the tools for tracking commodity flow in the economy, i.e. from where and for whom commodities are produced; this further simplifies the compilation of National Accounts.

The MCPA's first five digits explain the activity categories or the industries that produce the commodities. They are equivalent to the MSIC 2008 item category that represents the economic segmentation of the Malaysian economy. Items are created for cases of economic significance, and are homogeneous in terms of the industrial activities conducted within the economy. The next level, the sixth and seventh digits, represents the commodity group classification. In principle, it is similar to the subclass in the CPC Ver. 2 and has direct links at least with the first 4 digits of the HS 2007. The last three digits – i.e. the eighth to tenth digits – represent individual commodities.

#### Example A.16:

MCPA structure and links to CPC and HS

MCPA 2009 Ver.1.0		SECTION A	
Malaysia Classification of Products by Activity			
MCPA2009	DESCRIPTION	CPC2.0	HS2007
<b>01111 – Growing Of Maize</b>			
01111-01-001	Maize (corn), seed	01121	100510000
01111-02-001	Maize (corn), other	01122	100590000
<b>01112 – Growing of leguminous crops</b>			
01112-01-001	French beans (kacang buncis), fresh	01241	070820100
01112-01-002	Long beans (kacang panjang), fresh	01241	070820200
01112-01-003	Four angled bean (kacang botol), fresh	01241	070820900
01112-01-004	Other beans, fresh	01241	070820900
01112-02-001	Peas, fresh	01242	070810000
01112-03-001	Other leguminous vegetables, fresh	01249	070890000
01112-04-001	Beans of the species vigna mungo, dry	01701	071331000
01112-04-002	Small red beans, dry	01701	071332000
01112-04-003	Kidney beans, dry	01701	071333000
01112-04-004	Other beans, dry	01701	071339000
01112-05-001	Broad beans and horse beans, dry	01702	071350000
01112-06-001	Chickpeas, dry	01703	071320000
01112-07-001	Lentils, dry	01704	0713.40
01112-08-001	Peas (pisum sativum), dry	01705	071310000
01112-09-001	Dhall, dry	01709	071390900
01112-09-002	Other dried leguminous vegetables	01709	071390900

#### A2.2.4 Philippines<sup>80</sup>

The National Statistical Coordination Board (NSCB) of the Philippines has developed an integrated system of statistical classifications based on international standards. The system includes the following:

- Philippine Central Product Classification (**PCPC**): a standard classification of goods and services in the Philippines, including tangible assets, based on their physical properties and intrinsic nature as well as industrial origin (based on the UN's CPC);
- Philippine Standard Commodity Classification (**PSCC**): a detailed classification of all commodities that enter the Philippine trade (based on the HS);
- Philippine Standard Industrial Classification (**PSIC**): a classification of all economic activities performed in the country (based on ISIC);
- Philippine Classification of Individual Consumption According to Purpose (**PCOICOP**): a detailed classification of individual consumption expenditures on goods and services incurred by the three institutional sectors of the 1993 and 2008 System of National Accounts (based on the UN's COICOP);
- Philippine Standard Classification of Education (**PSCED**): a detailed classification of all educational levels in the Philippine Educational System (based on UNESCO's ISCED);
- Philippine Standard Occupational Classification (**PSOC**): a classification of the different occupations of the working population, including the military workforce (based on the ILO's ISCO).



Most of these schemes are relevant to agricultural statistics too. In particular, the PSCC is used by the Bureau of Agricultural Statistics, Department of Agriculture as the classification of reference for agricultural products.

In the PSCC, commodities are grouped according to the nature of the merchandise and the materials used in its production, the processing stage (whether crude, semi-manufactured or fully manufactured), the market practices and product uses, the commodity weight in terms of international trade, and technological features and development.

The current version is PSCC Rev.2<sup>81</sup>. The classifications were developed by the NSCB Technical Working Group on Commodity Classification to produce a relevant and up-to-date commodity classification which fulfils the following basic criteria:

- one-to-one links to the Tariff and Customs Code of the Philippines at seven digits
- alignment to the structure of the previous version up to five digits, thus ensuring continuity and comparability

As in its original version, the PSCC's structure is organized in six levels: Section, Division, Group, Subgroup, Item and Sub-Item. Each commodity or commodity group is identified by a unique code number:

- the first six digits correspond to the HS standard codes
- the first 8 digits correspond to the ASEAN Harmonized Tariff Nomenclature (AHTN) subheadings and
- the ninth and tenth digits are PSCC-specific.

<sup>80</sup> See Philippines (2015).

<sup>81</sup> Rev.2 contains: 10 Sections on broad economic categories; 66 Divisions; 260 Groups, which provide data that is mostly sought when compiling trade statistics at the international level; 1,032 Subgroups, which comprise all international trade commodities; 3,127 Items, that provide more detail and enable links to be drawn with the HS and other economic classifications; and 8,314 Sub-Items, which consist of all commodities of national interest.

**Example A.17:**

PSCC code structure for “0303.79.20-01 – Milkfish (bangus), frozen (excluding livers and roes)”

03	HS chapter
0303	HS heading
0303.79	HS sub-heading
0303.79.20	AHTN sub-heading (from ASEAN Harmonized Tariff Nomenclature)
0303.79.20-01	PSCC code



### A2.2.5 Indonesia

Indonesia adopted ISIC and the CPC as reference classifications for the development of the *Klasifikasi Baku Lapangan Usaha Indonesia* (KBLI – Indonesian Standard Industrial Classification) and *Klasifikasi Baku Komoditas Indonesia* (KBKI – Indonesian Standard Classification of Commodity) national standards.



The KBLI was developed on the basis of ISIC, with several adjustments at the three- and four-digit levels in accordance with the East Asia Manufacturing Statistics (EAMS) and the ASEAN Standard Industrial Classification (ASIC). An expansion was also made, by breaking down the structures in the KBLI to provide for more detailed economic activities in Indonesia.

An important development of the KBKI was conducted by Statistics Indonesia (BPS – *Badan Pusat Statistik*). The KBKI was divided into two main majors: goods (KBKI 2012 *Komoditas Barang*) and services (KBKI 2013 *Komoditas Jasa*) (Indonesia, 2010).

The KBKI was developed on the basis of the CPC, with which it coincides at the five-digit level.

#### Example A.18:

Relationship between KBKI and CPC structure and codes

KBKI		CPC	
Seksi 0	Hasil Pertanian, Kehutanan dan Perikanan	Section 0	Agriculture, forestry and fishery product
Divisi 01	Hasil dari Pertanian, Hortikultura dan Perkebunan	Division 01	Products of agriculture, horticulture and market gardening
011	Serealia	011	Cereals
0111	Gandum	0111	Wheat
01111	Gandum, benih	01111	Wheat, seed
01112	Gandum, lainnya	01112	Wheat, other
01112.00.001	Gandum gagang		
01112.00.002	Meslin untuk konsumsi manusia		
01112.00.003	Meslin lainnya		
01112.00.004	Biji gandum tanpa cangkang		
01112.00.999	Gandum lainnya		

Further structure breakdown beyond the standard CPC of KBKI 2012 *Komoditas Barang* has been introduced, from five digits to ten digits, on the basis of the *Klasifikasi Komoditi Indonesia* (KKI) and the *Klasifikasi Baku Hasil Produksi Indonesia* (KBHPI).

The KBLI and the KBKI are used to compile and tabulate various types of data that require a sufficient level of detail, both at national and international levels. These are used for production statistics, industrial statistics, trade statistics of goods and services and national accounts, and to compile balance of payments and data on prices and on consumption.

The main goal of these classifications is to enable data integration across different statistical domains within the NSS and to support the role of the national accounts as a central framework for the coordination of statistics. They are also used to develop derived classifications for specific applications.

Activity and product classifications that are highly harmonized with one another and with international standards were implemented due to the need for coordination and data integration within NSSs, and to enable data comparison at international level.

Correspondence tables between the KBLI and the KBKI were built to identify the links between economic activities and their products. They are useful tools to facilitate coordination and data integration within NSSs.

In particular, the application of international classifications for agricultural statistics enabled the introduction of standard concepts and definitions in this statistical area, improving data quality and their comparability with agricultural statistics collected and disseminated at global level.

However, in doing so, some challenges of different nature were also faced. In particular, the interpretation and correct understanding of the concepts and definitions used by the CPC and ISIC in subject matter areas relevant to agricultural activities posed issues. Other problems concerned the classification of certain products as outputs of agriculture in the CPC, while they are considered as outputs of manufacturing in the country. Another issue was the development of suitable breakdowns to meet country needs, and of correspondence tables with previous versions or with other related classifications.

Problems arising during development and implementation were solved through consultations with subject matter experts and reaching agreements with stakeholders, guided by the overall principle that accord should be maintained with existing concepts and definitions. Issues relating to comparison of time series data over time were managed through the development of correspondence tables between the old and latest versions of the classifications.

## A2.3. LATIN AMERICA AND THE CARIBBEAN

### A2.3.1 Brazil<sup>82</sup>

The classification of industrial activities and products at the Brazilian Institute of Geography and Statistics (IBGE – *Instituto Brasileiro de Geografia e Estatística*) is based on ISIC and on the EUROSTAT PRODCOM and CPA standards, although efforts to produce a product classification aligned with the CPC are currently underway.



The national classification of industrial activities is the *Classificação Nacional de Atividades Econômicas Versão 2.0 (CNAE V 2.0; National Economic Activity Classification Version 2.0.)*, which is based on ISIC Rev.4 and has been implemented in the statistical system and business registers of the public administration since 2007. In the year of transition between CNAE versions 1.0 and 2.0, IBGE used both versions in business registers, annual economic surveys and the Population Census 2010.

The CNAE may be used as it is or may be reorganized, with a variety of purposes, both statistical and administrative. These concern mainly:

- statistics and surveys requiring industrial activity classification (e.g. enterprise surveys) and other surveys (e.g. household surveys and employment surveys);
- population and agricultural censuses;
- national accounts;
- administrative and business registers and files (for this, a fifth level in the CNAE was added for tax administration and other public administration purposes).

The classification of products used by IBGE since 1998 is the **Lista de Produtos para Agropecuária, Indústria e Construção** (List for products of agriculture, industry and construction), called PRODLIST. PRODLIST follows the EUROSTAT PRODCOM and CPA standards and is based on the national CNAE.

The code is structured such that the first four digits (e.g. **0000.0000**) indicate the principal class of activity, based on the CNAE, and the following four digits (**0000.0000**) are a numerical sequence which is listed in alphabetical order to identify the products.

A new product classification, the *Classificação Central de Produto (CCP; Central Product Classification)* is being developed at IBGE. The CCP is based on the CPC Ver.2 and is expected to be available by end 2014. The structure of the new classification will correspond to the CPC at the three-digit level, while the fourth and fifth digit will be more or less aggregated, depending on the specific needs. IBGE must address challenges when developing the CCP, particularly in terms of the transition between the current classification system and the new one, and the use of the CPC for national accounts when the CPC and ISIC are not linked on a one-to-one basis.

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<sup>82</sup> See IBGE (2013); UNSD (2013d) and (2012b).

## A2.4 NORTH AFRICA

### A2.4.1 Tunisia<sup>83</sup>

The classification system in Tunisia has a long history, and involves different institutions and stakeholders. The system began in 1961 with the *Nomenclature d'Activités Economiques* (**NAE**; Nomenclature of Economic Activities), which was approved with *Décret* No. 61-302 of 28 August 1961.



In 1975, a new classification was developed to conduct the population census; however, this scheme never became official.

In 1983, for national accounts and economic budget purposes, the *Nomenclature d'Activités et de Produits* (**NAP**; Nomenclature of Activities and Products) was developed by the *Ministère du Plan* and the *Institut National de la Statistique et l'Institut de l'Economie*. Unlike the previous versions, this nomenclature links the classification of activities to the that of products. However, this scheme was not based on international standards and its use was limited.

Finally, in 1991, the *Institut National de la Normalisation et de la Propriété Industrielle* (**INNORPI**) developed a classification called *Nomenclature Générale d'Activités Economiques* (**NGAE**; General Nomenclature of Economic Activities), which became official on 26 March 1991. However, also this classification had two major limitations: on one hand, it was too detailed and was not linked to a classification of products; on the other, it was aligned to a European classification that was already obsolete (**NACE** 1970) and that had been replaced by a new version in 1990.

A consultation process with various economic and social partners was conducted within the framework of the activities of Tunisia's National Institute of Statistics (**INS**) to coordinate the NSS coordination. The consultation resulted in the development of a national system of activities and products consisting in the *Nomenclature d'Activités Tunisienne* (**NAT** – Nomenclature of Tunisian Activities) (Tunisia 2009b) and the *Classification Tunisienne des Produits* (**CTP** – Tunisian Classification of Products) (Tunisia 2009a). This system is based on international standards, but also takes into account the specificities of the Tunisian economy.

The **NAT** entered into force with the *Norme Tunisienne* NT.120.01 in 1996 and was developed on the basis of the **NACE** Rev. 1 and the **SITC** Rev.3. The **CTP** entered into force with the *Norme Tunisienne* NT.120.02 in 2002, and was developed on the basis of the **CPA** 1996 and the **CPC**.

In 2007, the **INS** revised the **NAT** and the **CTP**. The review process was undertaken to ensure alignment between the classifications of activities and products. It resulted in better alignment with the **UN** standards, while maintaining harmonization with **EUROSTAT** classifications and improved the level of detail to meet the national needs.

<sup>83</sup> See **UNSD** (2013e) and (2013f); Tunisia (2007).

