UNITED NATIONS
DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION

Meeting of the Expert Group on
International Statistical Classifications
New York, 19-22 May 2015

CPC implementation and other activities on classifications in FAO

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CPC IMPLEMENTATION AND OTHER ACTIVITIES ON CLASSIFICATIONS IN FAO

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11 May 2015

CPC implementation for agricultural statistics in FAOSTAT

FAO Statistics Division (ESS) is revising the classification system in use in FAOSTAT and replacing the FAOSTAT Commodity List (FCL) with CPC for what concerns agricultural commodities. The change in the classification in FAOSTAT is a challenging process, potentially affecting statistics at the core of FAO mandate, therefore it requires significant resources and a major collaboration effort amongst Divisions in FAO and with other International Organizations.

FAOSTAT Commodity List[3] is used in FAOSTAT since the 1960's (and revised in the 1990's); originally it was based on the UN Standard International Trade Classification (SITC)[4]. It includes about 700 commodities, grouped in 20 chapters and covers crops, livestock, food and other derived products. **FAOSTAT**[5] disseminates data for 250 countries in a number of statistical domains including production and trade of more than 700 agricultural commodities[6] since 1961.

ESS collects **production data** through a production questionnaire (PQ) that is sent on annual basis to National Statistical Offices (NSOs) and Ministries of Agriculture (MoAs) around the world (supplementary sources are also used). The PQ includes 209 primary commodities (167 crops and 42 livestock) and 47 processed products (34 vegetable oils and cakes, 4 dried fruit, 6 alcoholic beverages, 3 sugar products). The classification used is FCL (links to CPC have been added for the last two data collection).

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[3] The FCL structure and definitions are available on FAO Statistics Division at:
www.fao.org/waicent/faoinfo/economic/faodef/faodefe.htm

[4] http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=28;
http://unstats.un.org/unsd/publication/SeriesM/SeriesM_34rev4e.pdf

[5] http://faostat.fao.org/

[6] Does not include fishery products for which data are disseminated through different tools (see section at page 3 of this document for more information).

Trade data in ESS are not collected through a questionnaire: countries send to ESS their full trade files in Harmonized System (HS) format; data on food and agriculture are then extracted from trade files. Trade data are eventually converted from HS to FCL format. Once trade data are converted to FCL they are combined with production data to compile Supply and Utilization Accounts (SUA) and Food Balance Sheets (FBS) that provide a picture of the pattern of a country's food supply during a specified reference period[7]. Trade data are also published on FAOSTAT in FCL format.

The major asset of the current system (FCL) is to provide a **common framework** for production and trade data to compile SUA and FBS. However, the FCL now needs to be updated and harmonized with most recent versions of international schemes. Therefore the decision to adopt the CPC was made. The expected benefits from using CPC are significant: the main is to adopt an international classification that allows comparability of agriculture and food statistics with other domains and the integration of agricultural statistics into national statistical systems.

To implement CPC required substantial work for FAO; it is a long-term process, still underway. A precondition to the implementation of CPC in FAOSTAT was to contribute to CPC ver.2 and ver.2.1 to **increase detail** on agriculture, forest and fishery products at five digits and to **improve alignment** between CPC and HS (which remains a critical issue to FAO). In addition, a **CPC expanded** for agricultural statistics was developed (two more digits, one more level) and added as an official annex to CPC version 2.1. The main source to expand CPC was the FCL. When detail in CPC 2.1 expanded is not yet sufficient for FAOSTAT, the classification is expanded further by FAO and additional codes are created for database purpose.

"CPC expanded" is designed not only for FAO but also for countries engaged in the collection and dissemination of data on agriculture and food products. It provides a flexible tool that allows higher granularity at the lower level, where local species and varieties can be included, while maintaining comparability across countries at the higher level.

CPC is planned to be used for future data collection and to be applied to old time-series, in order to allow data comparability over time and avoid breaks in the series in FAOSTAT.

As mentioned, countries provide production data to FAO on annual basis, by means of a questionnaire sent by ESS to NSOs and MoAs. In the PQ agricultural products are identified and coded according to the FCL: in view of the change in the classification correlations to CPC codes have been introduced for the last two rounds of data collection.

Although the basic condition for data back cast is to have double coded data for at least one year, it seemed difficult for FAO to increase its data request to countries: additional burden on national offices might have lowered the response rate and hampered the data collection process. Therefore ESS identified alternative solutions to allow progress in the change of the classification and data back cast, while reducing the cost of this operation. The solution adopted depended on the type of link encountered and allowed full alignment between FCL and CPC:

- In **one-to-one** cases old data are transferred to the new classification assigning codes and definitions according to the new classification while data remain the same ("key method" [8]).

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7 FAO. 2001. "*Food Balance Sheet: A Handbook*". Rome.
http://www.fao.org/docrep/003/X9892E/X9892E00.htm#TopOfPage

[8] A classification at the lowest aggregation level is directly recoded to the revised classification. For example, the old code 12345 is recoded to 56789 and the historical data for 12345 are assigned to 56789. This method, also called "*key method*", assures a straightforward relationship between the old and the new results, as the old data are simply transferred to the new classification. The process and outcomes should, however, be documented and communicated to the users. The "key method" is described in Gert Buiten, Jarl Kampen and Sidney Vergouw, 2009, "*Producing*

- Also for **many-to-one** cases data conversion is straightforward as data in FCL are aggregated into the target classification (CPC). Such an aggregation entails a loss of information, as CPC is less detailed than FCL. Not to lose information in FAOSTAT, many-to-one cases have been turned into one-to-one correlations: first CPC is expanded further according to the detail available in FCL and then the "key method" is applied. When detail in the official CPC 2.1 expanded is not sufficient, the classification is expanded further for FAOSTAT purpose.

More difficulties are faced in case of one-to-many and many-to-many correlations. In these cases data are converted based on statisticians' best judgment according to the *dominant correspondence*. Coefficients of conversion have not been calculated, given the lack of information in both classification formats for at least one year and therefore the risk to lower data quality. The applied conversion factors are "1" and "0" exclusively:

- **One-to-many** correlations between FCL and CPC are managed identifying the dominant correspondence based on statistician's best judgement and assigning the conversion factor "1" accordingly.
- In **many-to-many** cases, which represent a minority in the FCL-CPC correlations, CPC is modified and aligned to the FCL.

Details and examples are provided in Appendix 1.

Product classifications for fisheries statistics: classification systems, use of CPC and future needs

FAO is the only source of global fisheries statistics. The FAO Statistics and Information Branch of the Fisheries and Aquaculture Department (FIPS) collates and disseminates fishery data, structured within different 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 has been agreed with the **Coordinating Working Party on Fisheries Statistics** (CWP[9]), of which FAO FIPS is Secretariat. Functional since 1960 under Article VI-2 of Basic Text of FAO, CWP provides a mechanism to coordinate fishery statistical programs of regional fishery bodies and other inter-governmental organizations with a remit for fishery statistics. One of the main objectives of CWP is setting standard concepts, definitions, classifications and methodologies for the collection and collation of fishery statistics.

Knowledge of the status and trends of fisheries production and fishery resources, including socio-economic aspects, is a key to sound policy-making and for assessing and tracking the performance of responsible fisheries management. According to FAO[10], the fraction of assessed stocks fished within biologically sustainable levels has exhibited a decreasing trend, declining from 90 percent in 1974 to 71 percent in 2011. Thus, in 2011, about 29 percent of fish stocks were estimated as fished at a biologically unsustainable level and therefore overfished. Further benefits and the sustainability of fisheries can only be achieved through more cautious and effective fisheries management aimed at maintaining fully exploited fishery

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historical time series for STS-statistics in NACE Rev.2", Discussion paper (09001), Statistics Netherlands. http://www.cbs.nl/NR/rdonlyres/A8A9AB3B-37F6-480A-BA76-253979DED22D/0/200901x10pub.pdf

[9] http://www.fao.org/fishery/cwp/en
[10] FAO. 2014a. *The State of World Fisheries and Aquaculture 2014*. Rome. 223 pp. (also available at www.fao.org/3/a-i3720e/index.html).

resources and recovering those that are overexploited or depleted. For better monitoring the trends of the fishery sector, it is important that production and trade statistics are precise as far as possible and focused on the identity of fish species. Thus, the classifications used by FAO are very detailed both for the collection of production statistics (capture and aquaculture) and production and trade of fisheries commodities.

Capture and aquaculture production statistics are collected according to the **List of Species for Fishery Statistics Purposes** (ASFIS)[11] that includes 12 600 species items in the 2015 version, selected according to their interest or relation to fisheries and aquaculture. ASFIS consists of an alphanumerical code composed by **International Standard Statistical Classification for Aquatic Animals and Plants** (ISSCAAP)[12] code + taxonomic code + 3-alpha identifier. ISSCAAP classifies aquatic species into 50 groups and 9 divisions on the basis of their taxonomic, ecological and economic characteristics. The taxonomic code is a ten-digit numerical code.

Production and trade of fisheries commodities are collected through the **International Standard Statistical Classification of Fishery Commodities** (ISSCFC). In this classification, fisheries commodities are classified according to the species and to the degree of processing. ISSCFC is based on the structure of SITC, with additional codes to include links to ISSCAAP, and breakdown by additional species and product forms. ISSCFC is regularly updated and linked to SITC, HS and very recently to CPC ver. 2.1.

To meet diverse user needs, fisheries data from each statistical collection are available through various formats, tools and information products. FAO fisheries statistics on capture and aquaculture and production and trade of fisheries commodities are accessible to external users in different ways, including:

- Search through the online query panels, which enable advanced users to extract customized information and reports, at http://www.fao.org/fishery/topic/16140/en.
- Alternatively, data can be downloaded as Database-Cum-Software System called FishStatJ for fishery statistical time series at http://www.fao.org/fishery/statistics/software/fishstatj/en.

Through these tools, users can extract fishery data according to different levels of aggregations and to other selected international classifications. For example, for fisheries commodities, in addition to ISSCFC classification, data can be extracted according to SITC, HS and plans are for having CPC ver. 2.1 in the next release as another reference classification.

While the **CPC** is widely used as a standard classification for production statistics, so far it has been quite rare to utilize CPC as a standard for describing fisheries and aquaculture products due to lack of adequate details. However, respect to previous versions, CPC ver. 2.1 represents a major improvement for fisheries and aquaculture products. Major modifications include separation of wild and farmed origin for primary products at subclass level; level of taxonomic groupings as a comparable as those adopted in HS; separation of products between food and non-food uses; and common criteria applied to separate primary fish products, as opposed to processed secondary products. These changes have made CPC more suitable for presenting fishery statistics when there is the need to present data in more aggregated forms.

However, further review and fine-tuning would still be needed for fishery products. Possible improvements for future revisions of the CPC could be the following:

- To create a better linkage with the new codes in HS 2017, in particular with reference to the separation of frozen, dried, salted or in brine codes of crustaceans, molluscs and other aquatic invertebrates into "frozen" and "other".
- To clarify where smoked crustaceans should be classified.
- To insert detail by groups of species for fish fillets, meat or prepared and preserved forms.

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[11] http://www.fao.org/fishery/collection/asfis/en
[12] ftp://ftp.fao.org/FI/STAT/DATA/ASFIS_structure.pdf

However, it might be difficult to introduce some of these modifications due to the limitation of available free codes in CPC ver.2.1. The development of a CPC expanded for fisheries statistics, to be added as an annex to the official CPC as for agriculture, may be an option.

Guidelines on International Classifications for Agricultural Statistics

The need for more meaningful international statistical classifications for agricultural and rural statistics has increased dramatically over the past years. This is due, on the one hand, to the increasing demand for new official statistics and the need to integrate data on agriculture, forestry and fisheries in the national statistical systems and, on the other hand, to the lack of country-level capacities to produce and report statistical information. Especially in developing countries, this has generated a "decline in the quantity and the quality of agricultural and rural statistics"[13].

FAO has responded to this challenge by deepening the collaboration with other international organizations for better integrating agriculture into major international schemes and by revising the classification system utilized in the Organization, in a way to enhance its relevance and ensure compliance with other international standards[14].

The Global Strategy to Improve Agricultural and Rural Statistics has also included work on international classifications for agricultural statistics in its action plan, as particularly relevant to fulfil its basic principles:

- **To harmonize** concepts, definitions, classifications and standards across different data producers within the country promotes the integration of agriculture into national statistical systems and facilitate a country's inclusion in global statistical activities.

- **To enhance** communication on classifications across different institutions in the country facilitates the harmonization and integration of data sources.

- **To promote** exchange of information and good practices across countries reinforces cooperation with regional and national organizations in the implementation of international classifications for agriculture statistics and boosts data comparability across countries and over time.

- **To implement** common international classifications improves data quality and decreases countries reporting burden to international organizations.

- **To support** countries through capacity development on classifications allows uptake and their correct application.

- **To facilitate** the participation of countries in international governance mechanisms on the development, management and review of standards and classifications for agriculture statistics ensures sustainability of agricultural statistics worldwide.

A global survey conducted in 2012 by FAO 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

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[13] WB, FAO, UN. "*Global Strategy to Improve Agricultural and Rural Statistics*"
www.fao.org/docrep/015/am082e/am082e00.pdf
[14] Valentina Ramaschiello, "*Aligning Classifications for Agricultural Statistics with Other International Standards*", Food and Agriculture Organization of the United Nations, Expert Group Meeting on International Classifications, UNSD, New York, May 2013, http://unstats.un.org/UNSD/class/intercop/expertgroup/2013/AC267-21.PDF

of 102 countries that participated in the survey, 60% asked for capacity development and technical assistance by FAO in this domain[15].

To meet the needs for capacity development raised by countries, FAO Statistics Division in partnership with the UN Statistics Division, has developed the **Guidelines on International Classifications for Agricultural Statistics** with the aim to:

- bring together comprehensive information on statistical classifications, and in particular those used for agricultural statistics;

- equip the user with a better understanding of these schemes; *and to*

- provide a convenient and practical reference for the application of international standards at the national level thus enhancing data quality and comparability across countries and over time.

The guidelines provide a useful reference also for statistical domains other than agriculture, as they include general-scope and not only sector-specific information.

Strengthening cooperation on classifications and standards between FAO and countries, regional organizations and other concerned institutions, is an essential requisite to increase the harmonization of data collection at the global level, and to give countries greater voice in the international governance of classifications and standards for agricultural statistics.

Consultation with countries is an essential mechanism for ensuring the relevance, uptake and update of international classifications. The guidelines will act as a facilitator of such a consultation and will provide a useful aid to those countries willing or already in the process of adopting and adapting international classifications to their statistical system.

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; it briefly introduces the Generic Statistical Information Model (GSIM).

- Chapter 2: provides information on correspondence and conversion tables, data conversion and time series backcast.

- Chapter 3: includes information sheets on major classifications used for agricultural statistics; six main features are presented (what, when and who, versions, purpose and applications, sections on agriculture, structure) for each classification 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)

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[15] Update on FAO work on classifications is provided on annual basis to the FAO Regional Commissions on Agricultural Statistics: "*International Product Classifications for Agricultural Statistics: A Brief Report of Activities in 2012-2013*" presented at APCAS/25, http://www.fao.org/fileadmin/templates/ess/documents/apcas25/APCAS-14-8.4-Int-Prod-Classifications.pdf; "FAO work on classifications: International Product Classifications for Agricultural Statistics: Brief Report of the activities 2012-2013", presented at AFCAS/23, www.fao.org/fileadmin/templates/ess/documents/afcas23/DOC_-_3b__Eng_.pdf

- International Standard Classification of Education (ISCED)
- SEEA land use (LUC) and land cover classification (LCC)
- FAO classifications for the World Programme for the Census of Agriculture (WCA)
- FAO classifications for fisheries and aquaculture statistics

- Chapter 4: illustrates the benefits from using international classifications at the country level and explains, providing examples, how these can be adapted to meet the needs of the national statistical system.

- Chapter 5: provides a summary of key information and recommendations included in the guidelines.

- The annex looks at successful practices world-wide, showcasing efforts undertaken by countries as well as regional organizations to support the implementation and adaptation of international classifications in their respective member states. The section brings together lessons learnt and illustrates how international classifications have been applied both at regional and country level. This is a living section that will be expanded and updated as soon as more information becomes available: countries are encouraged to contact the author to share and present their experience[16].

Developed in 2014, the Guidelines went through a thorough peer-review process, also thanks to the collaboration of the EG members. Currently under finalization, they will be published in the course of 2015. Based on the guidelines, capacity development initiatives will be developed at later stage

Classification of Statistical Activities in FAO Corporate Statistical Programme of Work

In 2010, the first consolidated FAO Statistical Programme of Work 2010-11 was compiled to provide a clear overview of ongoing statistical work at FAO, and since then it has become a regular activity. The publication provides an overview and a detailed description of the statistical activities carried out by all FAO Divisions active in the field of statistics.

The **third version** of the FAO Statistical Programme of Work, which covers the 2014-15 biennium[17], is organized around five principal statistical **functions** and coded according to the **Classification of Statistical Activities (CSA)**[18] to facilitate internal coordination and information exchange with other International Organizations. This represents a major development comparing to previous versions, where activities were grouped by Departments and Divisions. By grouping activities by type, this biennium the CSA will facilitate the identification of synergies and overlaps across activities, and of gaps or areas of development, providing key inputs to the next planning process.

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[16] Cases presented: (A) regional organizations: *L'Observatoire Economique et Statistique d'Afrique Subsaharienne (AFRISTAT), Interstate Statistical Committee of the Commonwealth of Independent States (CIS-STAT), Economic Commission for Latin America and the Caribbean (ECLAC), The Statistical Office of the European Union (EUROSTAT);* (B) countries: Bangladesh, Brazil, China, Indonesia, Malaysia, Mozambique, Philippines, Senegal, Tunisia.

[17] http://www.fao.org/3/a-i4045e.pdf

[18] The Classification of Statistical Activities (CSA) was adopted in 2005 by the Bureau of the Conference of European Statisticians (CES). Its main purpose is to classify the statistical activities undertaken by international and national organizations. Originally it was mainly used as the basis for the Database of International Statistical Activities (DISA), maintained by the UNECE secretariat. This classification has then been adopted for various other purposes and it is now the reference tool for organizing and exchanging information on statistical activities across organizations. It is also used as the basis the list of subject matter domains in the Content-Oriented Guidelines, produced by the SDMX.

To allow harmonization in FAO, the CSA is planned to be used also for other purposes such as the default view of the new FAOSTAT navigation tree. The use of the CSA will facilitate a more effective organization of the activities in FAO and easier information exchange also with other international organizations (for example, FAO contribution to UNECE DISA database).

The CSA is articulated in five domains. **Domains 1 to 3** relate to subject-matter activities, typically resulting in data outputs. **Domains 4 and 5** cover substantive cross-cutting issues which do not relate directly to outputs, but are more process and organization oriented. While implementing the CSA, FAO has customized some domains to meet the Organization's specific needs. A **Domain 0** has been added to organize statistical activities on food security and nutrition, as this is at the core of the FAO mandate (Fig.1).

Figure 1: CSA domains (including Domain 0 for FAO purpose)

DOMAIN 0: Food security and nutrition statistics (*added for FAO purpose*)
DOMAIN 1: Demographic and social statistics
DOMAIN 2: Economic statistics
DOMAIN 3: Environment and multi-domain statistics
DOMAIN 4: Methodology of data collection, processing, dissemination and analysis
DOMAIN 5: Strategic and managerial issues of official statistics

SEEA land classifications in in FAO and provisional proposals for improvements

Between 2008-2012 FAO has contributed significantly to the development of the System of Environmental-Economic Accounting - Central Framework (SEEA - CF) and particularly to the development of land classifications. Since its adoption as standard by the United Nations Statistical Commission at its 43rd Session in 2012, land classifications included in the SEEA have been taken as a reference in FAO in several domains of application.

SEEA-agri

In 2013 the Organization launched the SEEA for Agriculture initiative (SEEA-AGRI) with the aim to define comprehensive and standard satellite accounts for the integration of agricultural and environmental data based upon internationally-agreed concepts, definitions, classifications and interrelated tables and accounts; build a data base compliant with the SEEA–CF standards and focused on the agricultural sector (including fishery, forestry and natural resources). It also aims at supporting countries to coordinate agricultural information and statistics in cooperation with the Global Strategy to improve agricultural and rural statistics and to develop agri-environmental indicators (with OECD and Eurostat) and connections to the broader implementation of SEEA around the world.

Land use

FAO Statistics Division (ESS) collects land use statistics on annual basis through a land use questionnaire (LUQ)[19] that has been revised and updated according to SEEA classifications[20], with a few deviations or adaptations: LUQ includes categories on irrigation, planted area, area equipped for irrigation and organic land; the SEEA class "land under protective cover" has been expanded to differentiate between "*Area of*

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[19] Land use and irrigation questionnaire is available on FAO website Land use and irrigation
http://www.fao.org/economic/ess/ess-home/questionnaires/en/
[20] SEEA land use classification and definitions
http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf page 289 (320)

arable land and permanent crops under protective cover" and "*Area of buildings on farms[21]*"; the SEEA classes on inland and coastal waters "*used for maintenance and restoration of environmental functions including enhanced areas*" have been broken down into "*Inland waters used for maintenance and restoration of environmental functions*" and "*Enhanced inland waters*".

The land use classifications recommended to countries in the forthcoming FAO World Programme for Census of Agriculture[22] (WCA) 2020 is also under review for alignment with the SEEA.

By revising LUQ and WCA classifications, a number of issues for improvement have been raised in ESS: the provisional proposal for improvement is presented below.

1.1.2 and 1.1.5: Modify the explanatory notes for meadows and pastures

1.1.2 "Land under temporary meadows and pastures" is currently defined as "land cultivated with temporary herbaceous forage crops for mowing or pasture …". Similarly 1.1.5 "Land under permanent meadows and pastures" is defined as "Land used to grow permanent herbaceous forage crops…". The explanatory notes are not correct and they are not those originally provided by FAO. The definition should refer to how long the land is used as meadows/pastures and not the type of crop that is growing on the land (temporary crops may be growing on permanent meadows). Definitions should be modified as:

1.1.2: "Land *temporarily cultivated* with herbaceous forage crops for mowing or pasture. A period of less than five years is used to differentiate between temporary and permanent meadows."

1.1.5: "Land *used permanently* (for five years or more) to grow herbaceous forage crops through cultivation or naturally (wild prairie or grazing land)…"

1.1.6 "Agricultural land under protective cover"

Although 1.1.6 was a class proposed by FAO, the following modifications are now proposed: *family garden* should be moved under 1.1.1 "Land under temporary crops" and 1.1.4 "Land under permanent crops" as they should be considered as part of cropland. This change is in line with FAO LUQ and WCA.

The title of 1.1.6 should also be improved and aligned with its real scope/content that is not limited to areas protected with a cover (e.g. greenhouses) but is also extended to other constructions e.g. dwellings on farm and areas protected with fences or hedges. A possible title could be "Agricultural land under protective cover, farm buildings and farmyards".

It is also noted that 1.1.6 may need further disaggregation to distinguish between land under protective cover and land under buildings on farms. The proposed break-down is already in use in FAO LUQ.

1.2.1 Forest land

- add *nurseries* to the inclusions in the explanatory notes;
- on *mangroves*: the sentence "regardless whether this area is classified as land area or not" is not clear and may be reformulated; it should be clarified that mangroves in the SEEA are classified under forest land also when according to national schemes or other classifications they are under water areas instead of land.

1.1.5.1 "Cultivated permanent meadows and pastures"

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[21] Excl. arable land and permanent crops under protective cover, buildings for agro-food manufacture, and buildings in rural areas for exclusive residential purpose
[22] http://www.fao.org/economic/ess/ess-wca/en/

modify the title "Cultivated permanent meadows and pastures" → "Managed and cultivated permanent meadows and pastures"

1.1.5.2 "Naturally grown permanent meadows and pastures"

- modify the title "Naturally grown permanent meadows and pastures" → "Naturally grow*ing* permanent meadows and pastures"
- modify the explanatory note "land under naturally grown permanent meadows and pastures used for grazing, animal feeding or agricultural purpose" → "land under naturally grow*ing* permanent meadows and pastures used for grazing, animal feeding or *other* agricultural purpose"

1.7 "Land not in use"

Modify the explanatory note as "*Other* areas *not elsewhere classified* where there are no clearly visible indications…."

2 "Inland waters"

Modify the explanatory notes "Inland waters are areas corresponding to natural or artificial water courses" → "Inland waters are areas corresponding to natural or artificial water courses *and bodies*…"

Land cover[23]

A new FAO database, the Global Land Cover SHARE database (GLC-SHARE), was released in 2014 to collect previously scattered and unharmonized land cover information from around the globe into one centralized database. Applications of the new GLC-share database include monitoring of global land cover trends, evaluating the suitability of land for various uses, assessing the impact of climate change on food production, and land-use planning.

The approach implemented is based on the utilization of the ISO standard **Land Cover Classification System (LCCS)** for harmonization of the various available land cover databases. Using the most recent and improved version of LCCS (v3) for the harmonization, all land cover features were described using a set of attributes directly derived through the **Land Cover Meta Language (LCML)**, which is a language able to describe any type of land cover worldwide at the required scale or level of detail. LCML was used to create **11 land cover classes according to the System of Environmental-Economic Accounting (SEEA)**[24] indications and translate all LCCS based or not legends in the SEEA legend for the final classification of the GLC-SHARE database.

The GLC-SHARE land cover layers based on SEEA land cover classification: artificial surfaces; bare soils; croplands; grasslands; herbaceous vegetation; inland water bodies; mangroves; shrub-covered areas; snow and glaciers; sparse vegetation; tree-covered areas.

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[23] This section is taken from FAO News article: "*FAO initiative brings global land cover data under one roof for the first time*" http://www.fao.org/news/story/en/item/216144/icode/ and GLCN methodology http://www.glcn.org/databases/lc_glcshare_method_en.jsp

[24] SEEA land cover classification http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf page 299 (330)

Appendix 1

Examples of solutions adopted to convert FAOSTAT data on agricultural commodities from FCL to CPC format

In **one-to-one** cases old data are transferred to the new classification i.e. codes and definitions are re-assigned according to the new classification while data remain the same (Example 1).

Example 1:
data conversion from FCL to CPC in case of one-to-one type of link

FCL			FCL → CPC conversion factor	CPC ver. 2.1		
code	descriptor	data (old format) production quantity		code	descriptor	data (new format) production quantity
0125	cassava	**4 082 903 tonnes**	**1**	01520	cassava	**4 082 903 tonnes**

Data are taken as example and refer to the production of cassava in Cameroon, 2011 (source: FAOSTAT)

Also for **many-to-one** cases data conversion is straightforward as data in FCL are aggregated into CPC. Such an aggregation entails a loss of information, as the target classification is less detailed than the source one (Example 2).

Example 2:
data conversion from FCL to CPC in case of many-to-one type of link

FCL			FCL → CPC conversion factor	CPC ver.2.1		
code	descriptor	data (old format) production quantity		code	descriptor	data (new format) production quantity
0430	okra	**5 784 000 tonnes**	**Σ**	01239	other fruit bearing vegetables	5 784 000 + 27 557 000= **33 341 000 tonnes**
0463	other vegetables	**27 557 000 tonnes**				

Data refer to the production of okra and other fresh vegetables in India, 2011 (source: FAOSTAT)

Not to lose information in FAOSTAT, many-to-one cases are turned into one-to-one correlations: first the target classification is expanded further according to the detail available in FCL (new CPC expanded codes 01239.01 and 01239.90 in Example 3) and then the "key method" is applied as in Example 1. When detail in CPC 2.1 expanded is not yet sufficient, the classification is expanded further for FAOSTAT purpose.

Example 3:

FCL - CPC data conversion when many-to-one are turned into a one-to-one correlations (codes in **bold blue** text are the CPC expanded codes)

FCL			FCL → CPC conversion factor	CPC ver.2.1 expanded		
code	descriptor	data (old format) production quantity		code	descriptor	data (new format) production quantity
n/a	n/a	n/a		01239	other fruit-bearing vegetables	33 341 000 tonnes
0430	okra	**5 784 000 tonnes**	**1**	**01239.01**	okra	**5 784 000 tonnes**
0463	other vegetables	**27 557 000 tonnes**	**1**	**01239.90**	other fruit-bearing vegetables n.e.c.	**27 557 000 tonnes**

Data refer to the production of okra and other fresh vegetables in India, 2011 (source: FAOSTAT)

More difficulties are faced for one-to-many and many-to-many types of links. In these cases data have been converted based on statisticians' best judgment according to the *dominant* correspondence. Coefficients of conversion have not been calculated, given the lack of information in both formats for at least one year and, therefore, the risk to threaten data quality in the conversion. The conversion keys assigned are 1 and 0 exclusively.

One-to-many relations between FCL and CPC mainly concern agricultural (primary) vs. industrial (processed) products. For example, fresh and dried fruit in FCL are sometimes classified together while they are separated in CPC. This is due to the fact that CPC is closely linked to the International Standard Industrial Classification of All Economic Activities (ISIC) and dried fruit is considered as an output of the manufacturing industry and not of agriculture. The solution adopted for data conversion in FAOSTAT when dried fruit is not dedicated a specific class (as in the case of dates) is to associate FCL data only to the items in the agricultural section of CPC, leaving blanks in correspondence of the industrial goods section. In Example 4 below, the one-to-many correlation is converted into one-to-one, assigning the conversion factor "1" to the class that, based on statistician's best judgment, is the one better covering the FCL boundaries (dominant correspondence). In the metadata it will be noted that 01314 may, in some years for some countries, include information on dates dried on farm.

Example 4:

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

FCL			FCL → CPC conversion factor	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 tonnes**	**1**	01314 (agriculture)	dates, fresh	**724 894 tonnes**
			0	214190.03 (industrial)	dates, dried	**0**

Data refer to the production of dates in Algeria, 2011 (source: FAOSTAT)

In **many-to-many** cases, which represent a minority of cases in the FCL-CPC correlations, CPC is modified and aligned to FCL.

In Example 5, the FCL code 0619 put "subtropical fruit" together with "fruit fresh n.e.s." while in CPC subtropical fruit is classified with "other tropical and subtropical fruits, n.e.s." (01319). This generates a mismatch between the two classifications. Given the impossibility to estimate split ratios, and not to introduce breaks in the series, CPC is adapted and aligned to FCL (Example 6): the component "subtropical fruit" in CPC is moved under "other fruits n.e.c." as in FAOSTAT (01359.90). Definitions in the metadata are adjusted accordingly.

Example 5:
many-to-many correlations between FCL and CPC concerning tropical, subtropical and other fruit n.e.c.

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

Example 6:
data conversion from FCL to CPC in case of many-to-many type of link

FCL			FCL → CPC conversion factor	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.	**52 684 tonnes**	**1**	01319	other tropical **and subtropical** fruit, n.e.c. → other tropical fruit, n.e.c. (excluding subtropical fruit)	**52 684 tonnes**
0619	fruit fresh, n.e.s. (incl. subtropical)	**193 686(E) tonnes**	**1**	01359.90	other fruit, n.e.c. → other fruit, n.e.c. (**including** subtropical fruit)	**193 686(E) tonnes**

Data refer to the production of tropical fruit n.e.s. and fruit n.e.s. in Ecuador, 2011 (source: FAOSTAT; (E) = FAO estimates)