



MANUAL ON THE BSES: LAND USE/LAND COVER

*Session One: Environment Statistics Toolbox
Wednesday, 3rd May 2017*



Component 1: Environmental Conditions and Quality

Sub-component 1.2: Land Cover, Ecosystems and Biodiversity

Topic 1.2.1: Land cover

Statistics and Related Information		Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
(Bold Text - Core Set/Tier 1; Regular Text - Tier 2; <i>Italicized Text</i> - Tier 3)				
a.	Area under land cover categories	Area	<ul style="list-style-type: none"> ▪ By location ▪ By type of land cover (e.g., artificial surfaces including urban and associated areas; herbaceous crops; woody crops; multiple or layered crops; grassland; tree-covered areas; mangroves; shrub-covered areas; shrubs and/or herbaceous vegetation, aquatic or regularly flooded; sparsely natural vegetated areas; terrestrial barren land; permanent snow and glaciers; inland water bodies; and coastal water bodies and inter-tidal areas)^(a) ▪ National ▪ Sub-national 	<ul style="list-style-type: none"> ▪ FAO Land Cover Classification System ▪ System of Environmental-Economic Accounting (SEEA) Central Framework (2012) land cover categories ▪ European Environment Agency (EEA)

(a) SEEA land cover categories, based on FAO Land Cover Classification System

(http://unstats.un.org/unsd/envaccounting/seeaRev/SEEA_CF_Final_en.pdf)



Component 2: Environmental Resources and their Use

Sub-component 2.3: Land

Topic 2.3.1: Land use

Statistics and Related Information (Bold Text - Core Set/Tier 1; Regular Text - Tier 2; <i>Italicized Text</i> - Tier 3)	Category of Measurement	Potential Aggregations and Scales	Methodological Guidance
a. Area under land use categories	Area	<ul style="list-style-type: none"> • By type of land use (e.g., agriculture; forestry; land used for aquaculture; use of built-up and related areas; land used for maintenance and restoration of environmental functions; other uses of land not elsewhere classified; land not in use; inland waters used for aquaculture or holding facilities; inland waters used for maintenance and restoration of environmental functions; other uses of inland waters not elsewhere classified; inland water not in use; coastal waters (including area of coral reefs and mangroves); Exclusive Economic Zone (EEZ)) • National • Sub-national 	<ul style="list-style-type: none"> • FAO • UNECE Standard Classification of Land Use (1989) • SEEA Central Framework (2012) Annex 1
b. Other aspects of land use		<ul style="list-style-type: none"> • National • Sub-national 	
1. <i>Area of land under organic farming</i>	Area		<ul style="list-style-type: none"> • FAO Inter-departmental Working Group on Organic Agriculture
2. Area of land under irrigation	Area		
3. Area of land under sustainable forest management	Area		<ul style="list-style-type: none"> • Forest Stewardship Council



2.0 Introduction Relevance

- Currently describes importance of land use/land cover statistics
 - This could be elaborated
- To include a paragraph on ontology: the identification of land forms
 - An issue which is a particular difficulty in land use/land cover classification
 - Obliquely referred to in LCCS
- To include some issues related to land use change and tenure to cover those statistics



3.0 Definitions and Descriptions

- Concept of Modifiable Areal Unit Problem – scale and aggregation issue
 - Integral to understanding definitions and interpretation of land use/land cover products
- 1.2.1.a Area under land cover and 2.3.1.a Area under land use
 - Definitions brief – classification is main issue
 - Comments: greater distinction between land cover classification and land cover products (mapping)
 - Comments: Elaborate concept of change: specify if limited to transition from one land cover class to another or within the same land cover classes.
 - Comments: More specification of land cover change products. Include temporal dimension of change (abrupt changes vs gradual changes): influences the classification of land cover change.



3.0 Definitions and Descriptions (II)

- 2.3.1.b.1 Area of land under organic farming
 - Definitions aligned to crops chapter
 - FAO Codex Alimentarius
 - Identification based on WCA 2020 guidance



3.0 Definitions and Descriptions (III)

- 2.3.1.b.2 Area of land under irrigation
 - WCA 2020 definition (FAO Aquastat)
 - Remarks: to identify the data source for area of land
 - Comments: Irrigation can be agricultural land or forest. To clarify whether both are included
- 2.3.1.b.3 Area of land under sustainable forest management
 - FAO Sustainable Forest Management Toolbox
 - Operational - not in place
- 2.3.1.b.4 Area of land under agroforestry
 - FAO Sustainable Forest Management Toolbox
 - Operational - WCA 2020 definition



3.0 Definitions and Descriptions (III)

- 2.3.1.c Land ownership
 - Rights of access to land: communal, open access etc
 - FAO Land Tenure Studies
 - WCA 2020 operational – countries use own ownership categories



4.A. Classifications and Groupings

- SEEA Land Cover and Land Use
 - Comment: clarify not based on LCCS but based on its classifiers and rules
- FAO LCCS v. 2
 - Should this be included?
- FAO LCCS v.3
 - The legends (i.e. Land cover groupings vary for each implementation)
 - Operational requires a “database of land cover objects.” Include comments on what this means for implementation? Existing procedures to extract “objects” from remote sensing
 - Comments: to clarify – as it is not per se a classification but a system which allows building of a land cover classification.
- Land Use Classification for the Agricultural Census
- Should include other Land Use classifications?
 - Comments: IPCC land use categories
 - Comment: clarify that IPCC and WCA are aligned to SEEA



4.B. International Statistical Recommendations

- Section 4 – Land Cover dominates, less available on Land Use
- Intergovernmental Panel on Climate Change (IPCC)/Good Practice Guidance for Land Use, Land-Use Change and Forestry (LULUCF
- European Commission (2001). “Manual of concepts on land cover and land use information systems.”
- Only covers work specific to land cover/land use interpretation
 - Not work which uses it as an input e.g. GHG Inventory guidance
- Are there other recommendations to be mentioned?



4.C. Source of Global and Regional Statistics

- Text for each - update with institutions involved, main databases, area covered, date created, satellite and resolution information, update frequency, some description of the land cover, i.e. the classification legend and its intended purpose for use
- Comment: The only official statistical processes and datasets for land use are the Land Use database in FAOSTAT and the land use categories under the reporting process to the UNFCCC. Verify land and land degradation reporting under the UNCCD.
- Sources currently included:
 - FAO Global Land Cover Network
 - North American Land Change Monitoring System
 - Eurostat statistics on land cover and land use
 - from CORINE and LUCAS
 - National sources removed e.g. USGS, NOAA



4.C. Source of Global and Regional Statistics (II)

- Communities of Partnerships - i.e. GEOLAM – partnership of governments, associations, private sector, research, and agencies etc.
 - Verify acceptability with international community with relevant unit in international agency (FAO/ UNEP)?
- Non international or regional agencies removed, e.g. University of Maryland Forest Cover and Uni. of Maryland Global Land Cover Facility
 - Issues methods not validated, contradict estimates/products from international agencies.



5.0 Data collection and sources of data

- Refocused from how to produce to LCLU products to how to interpret; communicate with specialists
- Scope
- Uses of the Land Cover/Land Use Database
- Classification
- Sources of data
- Temporal aspects
- Spatial aspects
- Measurement Unit
- Accuracy



5.0 Data collection and sources of data

- Uses of the Land Cover/Land Use Database: This section could describe the different products produced based on country example, e.g. Ministry of Forestry, Ministry of Agriculture and Ministry of Planning
- Classification – should this be placed under section 4?
 - Explain what the environmental statistician will need to understand about the classification and make decisions on in order to commission a land cover/land use product
 - Comment: advantage of LCCS allows producing an infinite number of classifications by using the same set of basic classifiers and rules. This means that land cover classifications built with the LCCS are comparable and fully compatible
 - Do most countries have national classifications? Then this would be used



5.0 Data collection and sources of data

- Sources of data:
 - Explanation of the features of data which affect what the classification can be used for: spatial, spectral, temporal and radiometric resolution
 - Describe data sources used in some of the main examples from 4C
 - Not a long list of satellites
- Spatial aspects: Include some further discussion about the spatial resolution/scale of the products for various uses.
- Accuracy – accuracy of land cover/land use classification compared to ‘ground truth’.
 - Produced by remote sensing specialist but user should understand interpretation



6.A Uses and Dissemination

- Are these graphics useful given the size? Land parcels were not mentioned so could be removed?



6.D SDG Indicators

- SDGs 1.4.2, 5.a.1, 5.a.2, 11.3.1, 11.7.1, 15.1.1
- 1.4.2 Proportion of total adult population with secure tenure rights to land (not area of land, remove?)
- 5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure (not area of land, remove?)
- 5.a.2 Proportion of countries where the legal framework guarantees women's equal rights to land ownership and/or control tenure
- (not area of land, remove)
- 11.3.1 Ratio of land consumption rate to population growth rate
- 11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities
- 15.1.1 Forest area as a proportion of total land area
 - Should any others be included? Any objections?



6.C Commonly used Indicators

Other indicators included

- United Nations Convention to Combat Desertification (UNCCD) indicators on:
 - Trends in land productivity or functioning of the land
 - Trends in land cover
 - Any other indicators?



Summary of questions specific to LU/LC Chapter

- 3.0 Are these sources of definitions acceptable?
- 4.A FAO LCCS v. 2 Should this be included? Should chapter include other Land Use classifications?
- 4.C What sources of statistics and indicators should be included? Only official sources?
- 5.0 Comments on the new sub-sections of Chapter 5.0
- 6.0 Are these graphics useful given the size? Land parcels were not mentioned so could be removed?
- Remove SDGs **1.4.2, 5.a.1, 5.a.2**

